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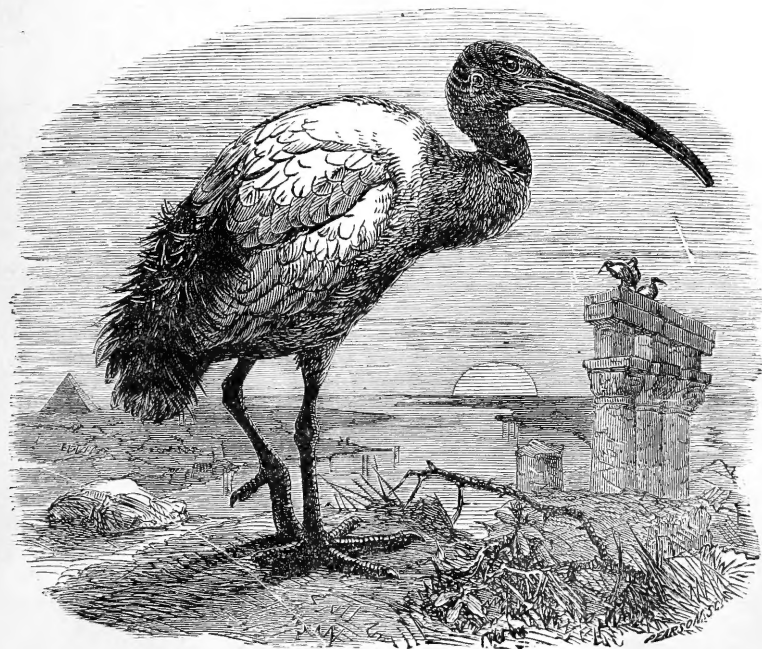
THE IBIS,

A

QUARTERLY JOURNAL OF ORNITHOLOGY.

EDITED BY
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SECRETARY TO THE ZOOLOGICAL SOCIETY OF LONDON,
AND
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VOL. II. 1902.

EIGHTH SERIES.

Quam magnificata sunt opera tua, Domine.

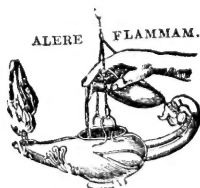
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PREFACE.

WE are somewhat pleased to be able to issue the forty-fourth volume of 'The Ibis' with a hundred pages less than the volumes immediately preceding it, because, as we informed our readers last year, the gradual augmentation in size of the annual volume seemed likely to cause them considerable embarrassment. At the same time we may say that it has not been found necessary to refuse any desirable contributions on the ground of space this year, and that several important articles are already promised for our next number.

Perhaps it hardly comes within the province of the Editors to specify any particular contribution as entitled to special remark. Nevertheless, we think we may venture to direct the attention of our readers to Mr. William Eagle Clarke's interesting account of his month's residence on the Eddystone Lighthouse, and his study of the phenomena of migration as

observed there, as one of the most valuable contributions to a comparatively obscure branch of our Science that has appeared of late years. We trust that Mr. Clarke may find other opportunities of doing good work of the same character, and that he will obtain the support which he so well deserves, while we may assure him that we shall be always glad to receive information as to his future labours in this attractive field of enquiry.

P. L. S. }
A. H. E. }

3 Hanover Square,
London, W.,
October 1st, 1902.

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THE IBIS.

EIGHTH SERIES.

No. V. JANUARY 1902.

I.—*On a Collection of Birds from Shendi, Sudan.* By the
Hon. N. CHARLES ROTHSCHILD and A. F. R. WOLLASTON.

(Plate I.)

AFTER a six days' journey from Cairo we arrived at Shendi on February 16th, 1901. Various misadventures had delayed us on our way into the Sudan, so, with a prospect of only five weeks before we should have to turn northwards again, we determined to make our camp at Shendi and to explore the neighbouring ground as thoroughly as possible, rather than attempt to hurry over a wide tract of country.

Shendi is situated on the east bank of the Nile, about midway between the Atbara River and Khartum; it is therefore well within the area of regular rainfall, which may be roughly said to begin at the Atbara. Our choice of a collecting-ground fell upon Shendi partly on account of its comparatively luxuriant vegetation, which is richer than that of any other part of the Nile Valley between Khartum and Assuan (Shendi has even been called the garden of the Sudan), partly because we expected to find there the northern limit of many tropical species, partly also on account of the fact that since the year 1850, when Mr. Galton collected near the Fifth Cataract, no ornithologist has paid more than a passing visit to this part of the country.

The fact that Shendi is the only place in the Sudan where it is possible to station cavalry is accounted for by the

existence there of a strip of grass, from which a poor forage is obtained. This strip of grass, about half a mile wide, runs along the east bank of the river for two or three miles southwards from Shendi; on the river side it is fringed by a few palm-trees, a few strips of cultivated land, and patches of thick tangles of acacia, broom, tamarisk, and Sodom-apple (*Calotropis procera*); while on the landward side it is bounded by a very dense scrub of acacia and mimosa, which becomes gradually thinner towards the desert.

As is well known, the desert of this region is not like that of Egypt or Nubia, a desolate waste of fine sand with not even a tree or a blade of grass for hundreds of miles, but it is fairly uniformly covered with scattered acacia-trees varying in height from ten to twenty feet, and here and there with small patches of a fine hair-like, almost white, grass. Occasionally one comes across a "khor," or wide, shallow, dried-up watercourse, which becomes an arm of the Nile during the rainy season; and at a distance of about eight to ten miles from the river is a range of low rocky hills, the highest rising perhaps four hundred feet above its level.

It will thus be seen that the country can be roughly divided up into four separate regions, each characterized by its own distinct fauna:—first, the river and its mud banks (with Terns, Pelicans, Geese, and Waders); second, the grass and scrub fringing the river (with Pigeons, Larks, *Cisticolæ*, Weavers, and Hornbills); third, the desert (with Wheatears, Shrikes, Crows, and Sand-Grouse); and fourth, the hills (with Rock-Thrushes, Eagle-Owls, and Vultures).

Our camp was pitched on the river-bank, and it was in the second region, that of the grass and scrub, that the majority of our birds were obtained.

In selecting a time of year suitable for a visit to the Sudan, one should endeavour to arrive there in November or December, when the weather is comparatively cool; but though it became exceedingly hot (110°–120° F. in the shade) towards the end of March, this drawback was more than counterbalanced by our good fortune in finding a

considerable number of nests, some of which were previously unknown. It is not unlikely that, could we have stayed for another month, we should have added several more to the list.

There seems to be a good deal of uncertainty as to the exact date of the general breeding-season in this part of the Sudan. Mr. H. F. Witherby, who was collecting last year a short way south of Khartum, but in a country very similar to that of Shendi, suggested that it was probably in June, after the rainy season. There cannot be the least doubt that the general breeding-season occurs in the months of February, March, and April. On the other hand, it is exceedingly likely that some species may breed again in the autumn: for instance, *Ædemosyne cantans*, of which we found a nest containing eggs on February 28th, is said by von Heuglin to breed in August and September; but this must be taken as the exception rather than as the rule.

So far as was possible, we only shot specimens of European migrants when some doubt was felt as to their identity; isolated specimens of migrants in such a case are of little or no value, but a careful record, extending over a period of a year or more, of those observed at stated points in the Nile Valley, which is one of the most important highways of migration in the world, would be of the greatest interest.

We take this opportunity of expressing our thanks to Captain Bulkeley Johnson and other officers of the Egyptian Cavalry stationed at Shendi, for much help and many kindnesses, which added greatly to the pleasures of our visit to the Sudan.

The natives we always found very friendly and on the whole fairly intelligent. One or two were particularly skilful in trapping birds and small mammals, and, whether it were a young hare, a bat, or a sand-grouse, they invariably brought it to us tied to the end of a stout piece of rope. They unfortunately have a bad habit of pulling out all the primaries from the wings of birds, which are consequently of little use as specimens.

The list of birds which follows will, we hope, prove of interest and of some value as an addition to our knowledge of their geographical distribution. It will be noticed how large a number of the species belong to Abyssinia also. We have purposely omitted to mention a large majority of the migratory birds which we saw. We have, moreover, made no attempt to describe the call-notes and songs, or to render them into words; such things can only be learnt by personal experience.

Our thanks are due to Mr. E. Hartert and the authorities of the Tring Museum for much valuable help in identifying our specimens.

N.B.—Species marked with an asterisk were fully identified, but specimens of them were not obtained. We purposely avoided shooting Vultures, Cranes, &c., partly because most collections are well supplied with them, and partly on account of the great difficulty of drying and packing the skins of large birds.

1. NECTARINIA METALLICA Licht.

28 ♂, 61 ♂, 188 ♂, 299 ♂, 341 ♂, 401 ♂ juv., 419 ♂ juv., 203 ♀.

This was the only species of Sun-bird which we obtained. It was very plentiful in the scrub along the river-bank, especially frequenting those places where the Sodom-apple (*Calotropis procera*) was growing; a pair of these birds perched on the flowers of this plant, with constantly quivering tails and wings, made as pretty a picture as one could wish to see.

Von Heuglin says that this species begins to breed in June and July, when it lays a white egg with large red spots at the broad end. We found several nests; the first, on March 10th, contained three much-incubated eggs, and this seems to be the full clutch. All the eggs which we obtained were pure white, with a very few minute purplish spots, hardly visible without the aid of a lens, scattered over the broad end. The nest, which somewhat resembles that of the Long-tailed Tit, is usually built in an acacia-bush,

from four to ten feet from the ground, either resting in a fork or suspended from a small branch; it is made almost entirely of the down from the inside of the fruit of the Sodom-apple, bound together with spiders' webs, and lined with a few feathers.

2. *ÆGITHALUS PUNCTIFRONS* Sund.

348 ♂, 329 ♂, 349 ♀.

No. 348 is in very fresh plumage; the other two specimens are in abraded plumage, and shew the beginning of the moult. We only met with this species twice; on both occasions in a small flock of about half a dozen individuals, and on both occasions our attention was drawn to them by hearing their constantly repeated note, a high-pitched squeak very similar to that of the Gold-crest, which bird they closely resemble in their attitude and movements. They kept to the topmost flowering twigs of the larger acacias, and we had some difficulty in obtaining our specimens.

3. *MOTACILLA ALBA* Linn.

226 ♀, 348 ♂, 43 ♀, 258 ♀, 45 ♂, 278 ♀.

This was one of the commonest of the riverside birds. Individuals were nearly always seen in pairs, and we thought that they shewed signs of breeding, but no nest was found. Many of them were extraordinarily tame; an old male, with a particularly fine black shield, used to run in and out of the tents without showing the least sign of fear.

4. **MOTACILLA VIDUA* Sund.

One was seen at Wad-Habushi, at the foot of the Sixth Cataract, on March 18th. The rocky nature of the river and river-banks there is very like that at Assuan, where this species is common.

5. **MOTACILLA FLAVA* Linn.

Small parties of this Wagtail, generally numbering three or four individuals, were seen on migration during March. The first was seen on March 2nd.

6. *ANTHUS CAMPESTRIS* (Linn.).

374 ♂.

One specimen was shot out of a small flock on March 16th.

7. *ANTHUS CERVINUS* (Pall.).

67 ♀.

The Red-throated Pipit was often to be seen on the river-banks in company with Wagtails.

8. *CALANDRELLA BRACHYDACTYLA* (Leisl.).

312 ♂, 108 ♂, 314 ♂, 142 ♀, 109 ♀, 110 ♀, 311 (?).

The Short-toed Lark was undoubtedly the most abundant species that we saw at Shendi. It was always to be seen in parties of fifty or so in the scrub along the river-bank, whilst in the desert, a few miles from the river, we frequently came across immense flocks of several thousands of these birds. The females are very markedly smaller than the males.

9 *GALERIDA CRISTATA* (Linn.).

201 ♂, 109 ♂, 95 ♂, 236 ♂, 237 ♂, 253 ♂, 355 ♂, 3 ♀, 381 ♀, 150 ♀, 106 ♀, 279 ♀, 296 ♀, 361 ♀, 295 ♀, 385 ♀, 42 ♀, 392 ♀, 346 ♀, 276 ♀, 282 ♂ juv., 390 ♀ Wad-Habushi.

Our series of this Crested Lark belongs to a form very closely allied to the *Galerida cristata flava* of Brehm. Some specimens, in fact, agree exactly with the typical examples in the Brehm Collection at Tring; but the majority of our Shendi specimens are a shade darker, especially with regard to the spots on the back. The young bird (No. 282), moreover, is very different from the young of *G. c. flava*, which is of a buffy sand-colour, without any very dark patches on the chest and back; the Shendi specimen has deep brown centres to the feathers of those parts. It seems therefore that this form is a slightly darker race than *G. c. flava*, though some specimens seem to be indistinguishable from it.

The Crested Lark of Assuan, *Galerida cristata maculata* Brehm, is a very much darker form, and darker still is the Crested Lark of Lower Egypt and the Delta, *G. c. nigricans* Brehm. It is not unreasonable to suppose that, if Crested Larks were collected all the way down the Nile Valley from Khartum, where the typical *G. c. flava* is found, to the

Delta, a series would be obtained presenting every intermediate stage between the very pale and the very dark forms. It is not our intention to enter into a controversy on the vexed question of nomenclature, but it seems to be a somewhat arbitrary proceeding to give a subspecific title to any one of these intermediate forms rather than to any other.

We found these Crested Larks common along the river-banks, especially where the land was cultivated. The male bird has a pleasing little song, not unlike that of the Wood-Lark, which he often utters when perched on the top of a bush or small tree. Two nests, found on February 24th and February 27th respectively, contained two and three half-fledged young; we did not succeed in obtaining eggs.

10. *AMMOMANES DESERTI* (Licht.).

373 ♂, 248 ♂, 139 ♀, 283 ♀.

A few pairs of these birds frequented the rocky hills in the desert, about ten miles east of Shendi. They were very shy and difficult to approach, taking short flights from one rock to another, very much as Rock-Pipits do. A newly built nest of grass, lined with hair, was found on a ledge in a low cliff; it seemed to belong to a pair of these birds, but we had no opportunity of revisiting it.

This species was originally described by Lichtenstein from specimens obtained in Upper Egypt. All our specimens are alike, and they differ from examples obtained at Assuan in having the breast practically unspotted, and in being of a much redder colour. These differences are perfectly noticeable when the bird is seen on the wing. We are not prepared to maintain that these forms should be distinguished by subspecific or varietal names, but from a logical point of view they certainly ought to be so distinguished, if that honour is to be conferred (as it is) on many of the Crested Larks, &c.

11. *AMMOMANES CINCTURA ARENICOLOR* (Sund.).

378 pullus.

We obtained only one example of this species, on March 17th.

12. PYRRHULAUDA MELANOCEPHALA Licht.

Pyrrhulauda melanocephala Licht. Verz. Doubl. p. 25 (1823).

405 ♂, 167 ♂, 5 ♂, 93 ♂, 220 ♂, 181 ♀, 6 ♀, 49 ♀, 162 ♀, 406 ♀, 7 ♀ juv., 169 ♀ juv., 233 (?) juv.

Pyrrhulauda melanocephala is the representative of the true *P. leucotis* (Stanley, in Salt's Voy. Abyssinia, p. lx, 1814), an Abyssinian bird, of which we have recently examined a specimen obtained by Mr. A. L. Butler at Gedaref in May 1901. It is, moreover, synonymous with *P. otoleuca* (Temm.), 1824. (Cf. Hartert, Nov. Zool. vol. viii. p. 340, 1901; and Grant, Bull. B. O. C. xii. p. 15, 1901.)

This species is fairly common, frequenting the more open patches of the scrub near the river-bank; we never found it very far from the water. It was noticeable how often the birds went about in parties of three, nearly always consisting of two males and one female. They are very Lark-like in their habits, closely resembling, in note and flight, the Short-toed Lark.

On March 19th we found a nest of this species, containing one egg; it was a very shallow depression in the open sandy ground, about the size and depth of a watch-glass, lined with a few pieces of dry grass. Visiting the nest three days later, we expected to find in it three or perhaps four eggs, but found instead that the single egg had been hatched. Mr. H. F. Witherby mentions (*Ibis*, 1901, p. 245) finding a nest of *P. leucotis (melanocephala)* containing a single egg, so it may be presumed that one is the full complement of eggs laid by this species.

13. PYRRHULAUDA FRONTALIS Bp.

Pyrrhulauda frontalis Bp. Consp. Av. i. p. 512.

136 ♂, 140 ♂, 145 ♂, 175 ♂, 320 ♂, 135 ♀, 168 ♀, 318 ♀.

This is the Sudanese representative of *P. melanauchen* (Cabanis), a bird which appears to be confined to the Abyssinian coast of the Red Sea. In the 'Catalogue of Birds,' *P. melanauchen* and *P. frontalis* are treated as being synonymous; but von Heuglin (*Orn. N.O.-Afr.* i. p. 671)

clearly distinguished between the two forms. *P. frontalis* differs from *P. melanauchen* in having no black nuchal band, which in the latter is more or less fully connected with the black of the under surface. The white patch on the forehead extends backwards as far as the eyes, being thus twice the size of the white spot on the forehead of *P. melanauchen*. The upper surface is much more sandy buff, not nearly so grey and brown as in the Abyssinian form.

These birds were less common at Shendi than the preceding species. In their habits they are very similar, but whereas *P. melanocephala* is a frequenter of the river-bank, this species is essentially a bird of the desert, very seldom being seen near the water. In colour they harmonize perfectly with their surroundings and are very difficult to see, the coal-black breast and under parts of the male looking exactly like the shadow of a stone or of some slight inequality of the ground.

14. *EMBERIZA CÆSIA* Cretzsch.

77 ♂, 57 ♂, 74 ♂, 186 ♂, 89 ♂, ?232 ♀, 281 ♀.

Not very common at Shendi, and, owing to its unobtrusive habits, seldom seen. Like so many other species that we met with, this bird hides itself in the thickest bushes during the day-time, and only becomes active during the last hour before sunset. According to Sharpe (Cat. B. xii. p. 536), this Bunting only winters in N.E. Africa. Although we did not find a nest, its behaviour was that of a resident species; it was nearly always to be seen in pairs, and there seemed to be no diminution in the numbers towards the end of our stay.

15. *PASSER RUFIDORSALIS*. (Plate I. fig. 2.)

Passer rufidorsalis Brehm; Witherby, Ibis, 1891, p. 146.

18 ♂, 328 ♂, 16 ♂, 63 ♂, 17 ♂, 337 ♂, 189 ♂, 147 ♂, 144 ♂, 207 ♂ juv., 69 ♂ pullus, 321 ♂ juv., 362 ♂ juv., 140 ♀, 418 ♀, 191 ♀, 190 ♀, 261 ♀, 367 ♀, 422 ♀, 436 ♀.

This is a southern form of *P. domesticus*. It might be described as a small and very bright House-Sparrow, with

a very bright chestnut mantle. The female can only be distinguished from the same sex of the House-Sparrow by its smaller size. It was first described by Brehm (*Naumannia*, 1856, p. 377) from specimens obtained at Khartum; Emin Pasha subsequently found it at Lado, a long way further south. At Shendi it is exceedingly common, especially frequenting the patches of cultivation round the houses on the river-bank. In its habits it is very much like our House-Sparrow, and its chirping note is quite indistinguishable.

We found several nests of this bird in March: they were loose structures of dry grass and feathers, and were placed in crevices of the hard mud bank on the west side of the Nile. The eggs resemble those of other Sparrows, but are devoid of all gloss; they are of a whitish-buff ground-colour, speckled all over with rusty brown and greyish brown, and having some underlying mauve spots; the spots and patches form a vague zone about the thick end. They are considerably smaller than those of *P. domesticus*. The greatest number of eggs found in one nest was three.

16. *PASSER LUTEUS* (Licht.).

90 ♂, 121 ♂, 154 ♂, 155 ♂, 161 ♂, 84 ♂, 88 ♂, 163 ♀, 160 ♀, 162 ♀, 22 (?) juv., 354 (?).

This beautiful yellow Sparrow was exceedingly abundant at Shendi, increasing in numbers towards the end of our stay. Flocks of fifty and upwards might be seen almost at any time flying northwards along the river-bank; they were never seen to proceed in the other direction. They are very partial to water, and might sometimes be seen in enormous flocks bathing in the shallow pools of the river.

17. *PETRONIA PYRGITA* (Heuglin).

170 ♂, 171 ♀.

Our two specimens are rather pale above, and are slightly larger than typical specimens from Abyssinia in the Tring Museum.

This was a rare bird at Shendi; besides the specimens obtained we saw no others. They were found at the top of a tall acacia-tree on the west bank of the Nile, and when the

first was shot the second flew to the ground and pecked its dead mate most savagely.

18. PYROMELANA FRANCISCANA (Isert).

231 (?), 228 ♂, 230 ♂, 271 ♀, 369 ♀.

All our specimens are in an intermediate state of plumage; we saw no males in the full dress of red and black, which, according to von Heuglin, is assumed in August and September.

This bird frequents the fields of millet or "dhurra," on the seeds of which it feeds; it is not common at Shendi, but a good many individuals were seen a few miles south, while at Wad-Habushi, about fifty miles south, it was exceedingly abundant.

19. HYPOCHERA ULTRAMARINA (Gm.).

72 ♂, 65 ♂, 68 ♂, 180 ♂, 359 ♂, 400 ♂, 251 ♂.

This little bright blue bird was fairly common along the river-banks, more especially in the cultivated parts. It was generally seen in company with *Lagonosticta brunneiceps*.

20. VIDUA PRINCIPALIS (Linn.).

193 ♀.

Our solitary specimen of this bird is a young female. We did not observe any adult birds in nuptial plumage.

21. ÆDEMOSYNE CANTANS (Gm.).

54 ♂, 319 ♂, 358 ♂, 416 ♂, 417 ♂, 31 ♀, 46 ♀, 50 ♀, 415 ♀, 280 (?).

Most of our specimens are in a moulting condition.

According to Lorenz and Hellmayr (Journ. f. Orn. 1901, p. 232), North-east African and Arabian specimens differ in several points from typical West-African specimens, and have therefore been named *Ædemosyne orientalis*.

These birds were tolerably common at Shendi and were remarkably tame. They were very sluggish in their habits, and might often be seen in small parties sitting closely huddled together on a branch for hours at a time.

Towards the end of February a pair of these birds built a nest in a low bush in the midst of our camp; it was composed almost entirely of scraps of paper and of cotton-

wool, and was shaped somewhat like a very untidy nest of a Greenfinch. Unfortunately, when two eggs had been laid, the nest was ruthlessly destroyed by a pair of *Passer rufidorsalis*, who paid the penalty of their crime with their lives.

22. LAGONOSTICTA BRUNNEICEPS Sharpe.

66 ♂, 146 ♂, 259 ♂, 250 ♀, 260 ♀, 263 ♀, 403 ♀.

The adult males are exceedingly bright, very much more so than specimens from Tropical Africa in the Tring Museum.

These beautiful little birds were never observed far from the huts on the river-bank, where they were often seen picking up crumbs of dhurra-meal almost out of the hands of the natives.

23. HYPHANTORNIS VITELLINUS Gray.

30 ♂, 143 ♂, 268 ♂, 132 ♀, 269 ♀, 270 ♀, 301 ♀.

The adult male is a very conspicuous bird, and his long-drawn wheezy call-note might be heard about every fifty yards in the thick scrub. Several of their hanging bottle-shaped nests were found, sometimes three or four depending from the same branch; one pair of birds was observed building at intervals for three or four weeks, but no eggs were laid during our stay at Shendi.

24. SPREO PULCHER (P. L. S. Müll.).

115 ♀, 324 ♀, 440 pullus.

The last specimen has the upper side slaty black with a very faint greenish gloss; the abdomen is dull rufous in colour, the rufous extending upwards towards the throat.

These Starling-like birds were occasionally seen in small parties of four or five, always several miles out in the desert. They were very wary and difficult to approach.

According to von Heuglin, this species breeds in September and October; but our young bird, caught on March 23rd, cannot have been out of the nest for more than a few days.

We were very much puzzled by the large number of empty nests in the trees in the desert; in some places every little tree contained one or more nests compactly built of twigs

with a scanty lining of grass. They were just such as this bird might build; but while we saw only four or five birds in a day, we were certain to see at least five hundred of these nests. In no instance did they contain eggs.

25. *CORVUS SCAPULATUS* Daud.

255 ♀, 264 ♂, 265 ♂, 99 ♀.

Shendi must be very nearly the northernmost limit reached by this species, as at the Pyramids of Meroe, about forty miles further north, though the country is admirably suited to it, not an individual was to be seen. It is a conspicuous and noisy bird, in habits very like the Raven, but rather more gregarious. A nest containing three fresh eggs was found in an acacia in the desert on March 23rd. The eggs resemble those of *Corvus corax*, but are much smaller, measuring only 44·5 by 30·5, 44 by 30·5, and 41·1 by 32·5.

26. **CORVUS UMBRINUS* Sund.

This Crow was rarer than the preceding species, and very much more shy in its habits.

A nest containing one hard-set egg was found on March 8th. The egg resembles that of *C. scapulatus*, but it is not so green and the markings are paler. It measures 44 by 31·5 mm.

27. **CORVUS AFFINIS* Rüpp.

A few pairs of these Crows were occasionally seen on the rocky hills in the desert; but they were always very careful to keep out of range of a gun.

28. *LANIUS NUBICUS* Licht.

225 ♂, 275 ♀, 377 (?).

The Nubian Shrike was common at Shendi. It was generally to be seen in pairs, and was exceedingly bold in resenting the approach of any intruders. On two occasions we observed the old birds feeding the young, which were scarcely able to fly, but no nests were found.

29. *LANIUS ISABELLINUS* Ehrenb.

224 (?), 346 ♂, 402 ♂.

Only three specimens of this Shrike were seen; it is a shy

and retiring bird, and but for its rufous-coloured tail it might easily escape notice altogether.

30. *LANIUS ASSIMILIS* C. L. Brehm.

366 ♀.

The single specimen of this Shrike was obtained in the desert on March 15th; it agrees in every detail with the type of *L. assimilis* in the Tring Museum.

31. *LANIUS LEUCONOTUS* C. L. Brehm.

113 ♂, 219 ♂.

L. leuconotus is probably the same as *L. dealbatus* (de Filippi). Our two specimens agree in every way with the type of *L. leuconotus* of Brehm.

This Shrike is not common, but it is one of the most conspicuous birds of the desert. It was usually seen singly, and shewed no signs of breeding.

32. *TELEPHONUS REMIGIALIS* Hartl. & Finsch.

223 ♂, 247 ♂, 335 ♂, 364 ♂, 398 ♂, 117 ♀, 397 ♀.

The females are considerably smaller than the males, the wing being from 4 to 6 mm. shorter.

This species haunts the very densest scrub and is one of the most shy and retiring birds that we met with at Shendi.

Like so many of the species of this region, it is more often seen during the last hour of daylight than at any other time, and its loud piping whistle may sometimes be heard a long time after sunset.

33. *ARGYA ACACIÆ* (Licht.).

274 ♂, 389 ♂, 62 ♀, 126 ♀, 137 ♀, 273 ♀, 285 ♀.

In the females the wing is distinctly shorter than in the males.

The native name of this species, which means "Seven Sisters," is very appropriate, inasmuch as it is nearly always seen in family-parties of six or seven. As a means of escape, it quite as often trusts to its feet as to its wings, hopping along the ground in great bounds of two or three yards at a time, with tail uplifted, and chattering angrily the

while. We never saw one make a flight of any length, or rise more than a few feet from the ground.

A nest containing four eggs was found on March 18th in a dense acacia-bush some miles out in the desert. It was a loosely built cup-shaped structure of small twigs and dry grass. The eggs resemble those of other species of the genus *Argya*, being of a beautiful glossy greenish blue and measuring 24·3 by 17·5, 23·4 by 17·7, 23·5 by 17·6, and 24 by 17·7 mm.

34. *PYCNONOTUS ARSINOE* (Hempr. & Ehrenb.).

414 (sex ?).

These Bulbuls were fairly common at Shendi and shewed a strong partiality for the neighbourhood of man. In their song and general behaviour they are not unlike the Black-bird, sitting day after day in the same tree, sometimes singing and sometimes driving away a swarm of too venturesome Sparrows (*Passer rufidorsalis*).

A nest containing two young birds was found on March 7th. It was a light cup-shaped structure of grass and was slung in a climbing gourd-plant about eight feet above the ground.

35. *SPILOPTILA CLAMANS* (Temm.).

118 ♂, 206 ♂, 305 ♂, 119 ♀, 138 ♀, 284 ♀, 304 ♀, 306 (?).

We first saw this beautiful little bird on February 26th; towards the end of March the numbers seemed to have increased considerably. They were sometimes to be seen in pairs, but more often in parties of six or eight, flying about in the desert from one bush to another, always swinging their long tails from side to side, and constantly uttering their loud call-note. On March 25th we observed a pair building a nest in a low bush in the desert; it was about eighteen inches above the ground and was a domed egg-shaped structure of fine grass, lined with a few feathers; there was a small round opening on either side. Unluckily, however, no eggs had been laid when we left Shendi two days later.

36. *CISTICOLA CISTICOLA* (Temm.).

22 ♂, 29 ♂, 176 ♂, 177 ♂, 185 ♂, 181 ♀, 302 ♀, 429 (?).

These little birds were exceedingly common in the grassy plain above mentioned and were never seen in the desert. They have a habit of rising almost vertically about thirty or forty feet into the air, singing their quaint little chattering song, and then dropping suddenly, as if dead, into the long grass.

A nest containing three young birds was found on March 4th.

37. *CISTICOLA ARIDULA*. (Plate I. fig. 1.)

Cisticola aridula Witherby, Ibis, 1901, p. 256.

370 (sex ?).

This bird agrees perfectly with the type of *C. aridula*, which Mr. Witherby has kindly sent us for comparison. The subterminal black bars on the rectrices are not altogether absent in the type specimen; but they are not so sharply defined as in *C. cisticola*, owing to the fact that the basal portion is much darker in *C. aridula* than in *C. cisticola*. In our Shendi specimen the black subterminal bars are rather more distinct than in Mr. Witherby's example.

The wing measures 47, the tail about 38 mm.

In addition to the other characters described by Mr. Witherby, this bird differs from *C. cisticola* in the entirely white outer web of the outermost tail-feather; in this feature it agrees with *C. hindii*.

Our solitary specimen of this species was obtained on March 16th on the west bank of the Nile. It was found among the rank "halfa-grass" so much frequented by *C. cisticola*, and, when flying, was seen to be noticeably paler than that species; but in other respects we are unable to say anything about its habits.

38. *BURNESIA GRACILIS* (Cretzsch.).

179 ♂, 32 ♂, 112 ♂, 204 ♂, 48 ♀, 205 ♀.

This little bird was common in the scrub on both sides of the river. It was always to be seen in pairs, and began to breed about the end of February. Nests were found on

February 24th, March 2nd, and March 6th; the nest resembles that of *Spiloptila clamans*, but is slightly smaller; all those which we found were built in shrubs (*Genista*) about three feet from the ground. For some unexplained reason the birds always deserted them before any eggs were laid.

39. *CERCOTRICHAS PODOBE* (P. L. S. Müll.).

19 ♂, 242 ♂, 331 ♂, 252 ♀, 326 ♀, 421 ♀.

The wing of the female is about 5 mm. shorter than that of the male.

This species was somewhat uncommon at Shendi, though, on account of its retiring habits, it was no doubt often overlooked. It bears a remarkable resemblance to our Blackbird both in its varied and flute-like song and in its manner of hopping about on the ground. It has a pretty habit of waving, and at the same time spreading out, its tail when perched upon a tree.

40. *HYPOLAIS PALLIDA* (Hempr. & Ehrenb.).

94 ♀, 420 ♀.

This species was exceedingly common, especially frequenting the open scrub towards the desert. It was very often to be seen in pairs, and had all the appearance of being resident, but no nests were found.

41. *SYLVIA ORPHEA* Temm.

351 ♂, 330 ♀.

The Orphean Warbler was frequently to be met with in the scrub along the river-bank.

42. *SYLVIA RUEPPELLI* Temm.

277 ♂, 344 ♀.

Our two specimens of Rüppell's Warbler were all that we saw. They were very shy and were met with in the most impenetrable portions of the scrub.

43. *SYLVIA MOMUS* (Hempr. & Ehrenb.).

70 ♂, 187 ♂, 309 ♂.

These specimens have been compared with the type of *S. momus* in the Berlin Museum. It is possible that even-

tually *S. momus* and *S. mystacea* may turn out to be the same species.

44. *AGROBATES GALACTOTES MINOR* (Cab.).

307 ♂, 445 ♀, 333 (?).

North-East African specimens of the Rufous Warbler are smaller and somewhat darker on the back than typical examples from Spain.

The Rufous Warbler was first noticed at Shendi on March 10th, after which date it became a good deal more numerous.

45. *MONTICOLA CYANUS* (L.).

248 ♀.

Rock-Thrushes were occasionally seen on the rocky hills out in the desert.

46. *SAXICOLA ŒNANTHE* (L.).

153 ♀, 356 ♂, 413 ♂.

The Common Wheatear was frequently seen on the river-bank.

47. *SAXICOLA ISABELLINA* Cretzschm.

148 (?), 209 (?), 4 (?).

The Isabelline Wheatear was not uncommon in the desert. It was usually to be seen in pairs.

48. *SAXICOLA MELANOLEUCA* (Güld.).

249 ♂, 313 ♂, 266 ♀, 298 ♀.

The Black-throated Wheatear was a fairly common frequenter of the river-bank. It was seldom seen during the day, but towards evening became very active; on several occasions we observed one of these birds, at least an hour after sunset, when it was quite dark, dart out from the bank and hawk for flies over the water like a Flycatcher.

49. *SAXICOLA DESERTI* Temm.

24 ♂, 83 ♂, 100 ♂, 44 (sex ?).

The Desert-Wheatear was as often to be seen on the river-bank as in the desert. It was generally met with in pairs.

50. *COTILE MINOR* Cab.

111 ♂, 288 ♂, 292 ♂, 336 ♂, 178 (sex?).

There is a considerable difference in size in these specimens.

These little Martins were fairly numerous at Shendi, frequenting the river-banks either singly or in small parties just as our Sand-Martins do. On March 25th a colony of from fifteen to twenty pairs was found nesting in a sandpit on the brink of the river. The holes were horizontal and were about two feet long. One nest contained five eggs slightly incubated: the eggs are pure white; one of them measures 16×12.5 mm.

51. **COTILE RIPARIA* Linn.

Sand-Martins were often seen on the river-bank, sometimes in company with the last species.

52. *HIRUNDO RUSTICA* Linn.

450 (sex?)

Chimney-Swallows were occasionally seen at Shendi. Our specimen was shot on March 26th, when it must have been on migration.

53. *HIRUNDO SMITHI* Leach.

267 ♂, 317 ♂, 316 ♀.

This beautiful Swallow was very rare at Shendi, two or three pairs only frequenting a spot where the mud bank, harder than usual, projected as a little cliff into the river. A few pairs were also seen in a similar situation at Wad-Habushi, fifty miles further south. A shrill wailing cry is uttered by both males and females.

On March 11th a nest containing three eggs was found in a crevice between two strata of the low cliff above mentioned. The eggs are pure white.

54. *HIRUNDO ÆTHIOPICA* Blanf.

448 (sex?).

Our solitary specimen of this Swallow was the only one seen.

55. *TACHORNIS PARVA* (Licht.).

38 ♂, 39 ♂, 239 ♂, 241 ♂, 238 ♀, 308 ♀, 350 ♀, 240 (sex?), 37 ♀.

This little Swift was fairly common at Shendi. So far as we observed, it is quite a silent bird; in other respects its habits are very similar to those of the Common Swift. Fifteen or twenty pairs were always to be seen flying about one of the few big Dom-palms of the district. They were constantly going into the crevices at the bases of the leaves, and must undoubtedly have had nests there, but the nature of the tree forbade any attempts at obtaining them.

56. *CAPRIMULGUS EXIMIUS*. (Plate I. figs. 3, 4.)

Caprimulgus eximius Temm.; Witherby, Ibis, 1901, p. 259.

114 ♂, 272 ♂, 323 ♂, 446 ♂, 447 ♂, 426 ♂ jr., 322 ♀, 371 ♀, 441 ♀, 443 ♀, 444 ♀, 449 ♂, 451 ♀, 291 ♂, 412 ♀, 451A pull.

There is not much variation among the adult birds. Some are of a lighter yellow, while others are more rufous, but the differences are not great. The width of the white tips to the lateral rectrices in the males varies from 30 to 40 mm.; the length of the wing varies from about 174 to 185 mm. On the interscapulum there is sometimes a small but well-marked patch without any white marks. In the females, which are of the same size as the males, the white patches on the primaries are bordered with buff, which colour gradually merges into the white; and the rectrices, instead of being tipped with white, are tipped with buff. The width of the buff tip to the outermost rectrices varies from 20 to 25 mm.

The young male (No. 426) has already moulted the rectrices and primaries, but the crissum, abdomen, and rump are still covered with the first fluffy feathers of the young.

The pullus (March 27th) is covered with rufous-isabelline down; that on the abdomen is white. The tubular nostrils are remarkably prominent.

Our specimens of this most beautiful Nightjar were all obtained within a few miles of Shendi. The ground which they mostly seemed to prefer was of quite a distinctive nature; it was generally sloping and was intermediate in character between the grassy scrub and the open desert; the soil was not fine and earthy but coarse and gravelly, often with a

good many scattered stones and tufts of grass. We never saw one of the birds amongst the trees or in thick scrub. During the day, like other Nightjars, they lie very close and are seldom noticed; they harmonize most perfectly with their surroundings and are exceedingly difficult to see. On one occasion we only detected one by its shuffling along an inch or so to avoid being trodden on by a camel. At night they are on the wing very soon after sunset, when they come down to the river. They fly up and down the banks or out over the water, often touching the surface either to drink or to catch an insect; after half an hour or so they seem to retire towards the desert. We never saw one of these Nightjars perched on a tree; they sit on the ground and often "churr" for several minutes at a time. The "churr" is distinctly of a lower pitch than that of *Scotornis climacurus*.

We saw this species also at Wad-Habushi, halfway between Shendi and Khartum, in a locality very similar to that near Shendi. It may therefore perhaps be presumed that *C. eximius* will eventually be found to be resident in this region wherever ground suitable to its habits exists; that is to say, from the Atbara right up the Nile and the White Nile almost as far as Fashoda. It is a bird which might very easily be overlooked: had we stopped a few days only at Shendi, we should certainly not have found it; in fact, it was not until we had been there very nearly a month that we became acquainted with its habits.

We found three nests, or rather breeding-spots, on March 16th, 20th, and 27th; the first two contained two eggs each, very much incubated, the third contained one young bird just hatched and an addled egg. There was no pretence at a nest, not even a depression, the eggs being laid on the bare ground near a tuft of grass, under which the bird often hides. They are of the usual character of those of Nightjars and vary considerably in markings and shape; some are darker than others, some are oval, and some a little pointed at one end. The ground-colour is a dirty greyish buff, thickly spotted all over with liver-brown or greyish-brown patches and under-

lying mauve spots. They measure 28·7 by 21·5, 29·3 by 21·1, and 29·5 by 20·7 mm.

The natives call this bird "Abu Tabag" (Father of bowls), presumably on account of the bowl-like appearance of the open mouth.

57. *CAPRIMULGUS ÆGYPTIUS* Licht.

293 ♀, 411 ♂.

We obtained only two specimens of the Egyptian Nightjar; the first was found in long grass among trees during the day-time, the second was flying in the evening in company with *C. eximius*.

58. *SCOTORNIS CLIMACURUS* (Vieill.).

199 ♂, 410 ♂, 421 ♂, 200 ♀, 375 ♀.

There is much variation in the general colour of these birds, No. 421 being much more rufous, and Nos. 375 and 410 very much blacker than the others.

This beautiful long-tailed Goatsucker was fairly common at Shendi. Unlike *Caprimulgus eximius* it is essentially a bird of the scrub and thick trees, hiding by day in the most shady and impenetrable thickets. At night it seems to spend almost as much time in sitting "churring" at the top of some tree as in flying; it was often seen flitting about the river in company with *C. eximius*. The two long central tail-feathers of the male are held apart in flight at an angle of about twenty-five or thirty degrees. Though pairs were often seen, they did not seem to be breeding; neither the testes nor the ovaries of any of our specimens being enlarged.

59. *CORACIAS ABYSSINICUS* Bodd.

376 ♂, 357 ♀, 51 ♀.

The Abyssinian Roller was occasionally seen, but it was usually very wary and difficult to approach. The native name, which means "Child of the clouds," is well chosen; you hear one of these birds high up above your head almost out of sight, and then down it suddenly comes in a fluttering corkscrew flight, with wings and tail spread out, to perch and chatter at you from the top of a tree, just out of gunshot. A pair were twice seen to go into a hole in the

mud wall of a deserted house; we hoped that they were going to nest there, but they had not done so before we left Shendi.

60. *MEROPS PUSILLUS* P. L. S. Müller.

M. p. ocularis Reichen. Orn. Monatsb. 1900, p. 86.

25 ♂.

The fact that we saw and obtained only one specimen of this little Bee-eater at Shendi is rather remarkable, considering how abundant it is at Khartum, where it may be said to share with *Passer luteus* the honour of being the commonest bird.

61. *MEROPS VIRIDISSIMUS* Swains.

71 ♂, 96 ♂, 127 ♂, 126 ♂, 243 ♂, 60 ♀.

The absence of the blue throat and other differences necessitate the separation of the African and Indian forms of this bird.

This Bee-eater was exceedingly common at Shendi, sometimes being seen in little flocks of five or six, more often in pairs. They were occasionally observed to go into holes in banks, but we did not succeed in finding a nest.

62. *UPUPA EPOPS* Linn.

227 ♂, 287 ♀, 388 ♀.

Erlanger has separated the Mediterranean form of *Upupa epops* as *Upupa epops pallida* (Journ. f. Orn. 1899, p. 15), but our Sudan specimens and others from North Africa in the Tring Museum do not seem to differ in any way from typical North-European specimens.

There was a sudden immigration of Hoopoes on March 8th, after which they might be seen for a few days in almost every tree.

63. *LOPHOCEROS NASUTUS* (Linn.).

78 ♂, 245 ♂, 173 ♀, 174 ♀, 246 ♀.

These remarkably ugly Hornbills were fairly numerous at Shendi. They spend most of the day in the dhurra-fields along the river-banks, where they do a good deal of damage; at night they retire to the thick belt of trees which fringes the desert. Not the least remarkable feature of this bird is

its extraordinarily tough skin, which is capable of turning shot of almost any size at more than thirty yards distance.

64. *CERYLE RUDIS* (Linn.).

11 ♂.

This was the only Kingfisher we saw. It was very common and remarkably tame, sometimes hanging motionless in the air within a few yards of us, and then dropping with a sudden splash into the river.

65. *COCCYSTES GLANDARIUS* (Linn.).

151 ♀.

Our solitary specimen of the Great Spotted Cuckoo was the only one seen.

66. *CENTROPUS SUPERCILIOSUS* Hempr. & Ehrenb.

363 ♂.

We only met with this bird once.

67. *TRACHYPHONUS MARGARITATUS* (Rüpp.).

203 ♂, 432 ♂.

The bills of our specimens are a little longer than those of Abyssinian examples in the Tring Museum.

This gaudy Barbet was very rare at Shendi; we only met with it on two occasions. It has a loud clear note, which might easily be mistaken for a human whistle.

The native name of this bird means "wood-pecker."

68. *MESOPICUS GOERTAN* (P. L. S. Müll.).

80 ♂.

Our single specimen of this species was the only Wood-pecker that we saw. It was in the midst of a very dense thicket, and our attention was drawn to it by hearing its very characteristic cry.

69. *TURTUR TURTUR* (Linn.).

34 ♂.

A single Turtle-Dove was shot at Shendi on February 19th. It appears to be slightly paler than the majority of European specimens, but it can be matched by British examples. It was probably a European bird in its winter-quarters.

70. *TURTUR ROSEOGRISEUS* (Sund.).

86 ♂, 339 ♂, 26 ♀, 35 ♀, 36 ♀, 164 ♀, 165 ♀, 340 ♀, 353 pullus.

This Dove was exceedingly common. Upwards of fifty might sometimes be seen sitting in one of the bigger trees near the river; it was also well distributed all over the desert, but was less numerous there.

Several nests were found in acacia-bushes at heights varying from three to six feet from the ground. They were light structures of twigs, very similar to those of the European Turtle-Dove. The number of eggs was two in every case; they are white with very little gloss: average measurements 29.2 by 23 mm.

71. *TURTUR DECIPIENS* Finsch & Hartl.

123 ♂, 192 ♂, 256 ♂, 372 ♂, 124 ♀, 158 ♀.

This is the same form which has been called *Turtur ambiguus* by Mr. Witherby (Ibis, 1901, p. 266). Mr. Witherby found that his specimens from the White Nile, and those in the Tring Museum from N.E. Africa, differed from the type of *T. ambiguus* in having slightly longer wings and considerably wider tips to the rectrices. But after an examination of the specimens in the British Museum, he decided not to separate the form found in North-East Africa from the West-African *T. ambiguus*.

We are inclined to think that it would be more correct to separate the two forms, but in any case our birds must be called *T. decipiens*, and not *T. ambiguus*; the former name was published some years before the latter, and was originally given to the North-East African form.

This Dove was very much less numerous than the preceding species, from which it was readily distinguished by its larger size. It becomes increasingly common as one goes southwards from Shendi, which place seems to be about its most northerly limit.

A nest containing two eggs was found in an acacia-bush on March 16th. The nest was like that of the preceding species. The eggs are of a pure white, without gloss, and measure 32.1 by 22.5 and 29.6 by 23 mm.

72. *TURTUR SENEGALENSIS* (Linn.).

27 ♂, 105 ♂, 129 ♂, 128 ♀ juv.

This Turtle-Dove was very common at Shendi, but less so than *T. roseogriseus*. We found several nests; the number of eggs was always two. They are glossy white; average measurements 25·1 by 19·5 and 24 by 19 mm.

73. *ÆNA CAPENSIS* (Linn.).

52 ♂, 104 ♂, 105 ♂, 149 ♂, 159 ♂, 235 ♂, 382 ♂, 383 ♂, 82 ♂ juv., 134 ♀, 289 ♀, 384 ♀.

We first saw this little long-tailed Dove at Berber, which may perhaps be considered its northernmost limit. At Shendi it was very plentiful and well distributed all over the country, a nest being even found in the desert ten or more miles from the river.

We found the nest of this species several times, the first being on February 20th. It is the slightest possible structure of fine twigs and coarse grass, or sometimes of grass only, and is placed in a low bush, generally not more than three feet from the ground. The number of eggs was sometimes one, more often two. They are not white, like those of most *Columbidæ*, but are of a rich cream-colour, and have a hard and thick shell. Measurements: 20·1 by 16, 21·7 by 15·9, 20 by 15·5, and 20·5 by 16 mm.

74. *STRIX FLAMMEA MACULATA* Brehm.

423 ♂, 427 ♂, 434 ♂, 424 ♀, 428 ♀, 442 ♀, 438 (sex?), 439 (sex?).

Our specimens of the Barn-Owl agree very well with the types of Brehm's *S. f. maculata* now in the Tring Museum. They all have a dark strongly spotted upper surface; and the under surface is also heavily marked with blackish spots, some of which are shaped very much like arrow-heads. In these features they differ from the Barn-Owl of Lower Egypt and the neighbourhood of Cairo, which E. Hartert (Nov. Zool. vii. p. 533) has provisionally united with the West-European and Mediterranean form, the *S. f. kirchhoffi* of Brehm. The legs of our specimens also appear to be somewhat longer and more bare than in typical European specimens.

The differences between the Tropical Barn-Owl (*S. f. maculata*), the true *S. flammea*, and the West-European *S. f. kirchhoffi* have been fully discussed by Reichenow ('Die Vögel Afrikas,' i. p. 676, 1901).

Barn-Owls were fairly common at Shendi; we often heard, but seldom saw, them. They frequented the ruins of the old town of Shendi. Nos. 423, 424, 427, and 428 were obtained at Kabushea, about forty miles to the north, where we also obtained young birds in down on March 23rd.

75. *BUBO ASCALAPHUS DESERTORUM* Erlanger.

294 ♂, 409 ♂, 344 pullus.

These specimens from Shendi agree absolutely with specimens of *B. a. desertorum* (Erl. Orn. Monatsb. v. p. 192, 1897) in the Tring Museum from Gabes, Tunis.

This very handsome Eagle-Owl was found on two isolated rocky hills, Gebel Margel and Gebel el Lahemer, about ten miles east of Shendi. There appeared to be only one pair of Owls on each. They were as often found sitting on the sunny as on the shady side of the hill during the day-time, and were always very much on the alert, flying away without hesitation if approached too closely.

On March 13th we found a nest containing two young birds in down on the south side of Gebel Margel. It was merely a depression in the midst of large blocks of stone, and was fully exposed to the heat of the sun; at mid-day the rocks became so hot that it was impossible to touch them with the hand for any length of time. Round the nest were large numbers of pellets, containing the hair and bones of hares, mice, and jerboas.

76. *PISORHINA LEUCOTIS* (Temm.).

325 ♂, 76 ♂ juv., 342 juv. (sex?), 343 juv. (sex?), 430 ♀ juv., 431 ♀ juv., 432 ♂ juv.

This little Owl was not uncommon at Shendi. Some of our specimens were found in trees, and some in the ruins of the town of Shendi.

On March 22nd a nest containing three almost fully-fledged young birds was found in a deserted well.

77. *MILVUS ÆGYPTIUS* (Gm.).

194 ♂, 195 ♂, 290 ♂, 315 ♂.

All our specimens are young birds.

The Egyptian Kite was very common at Shendi, where a dozen or more might often be seen flying over our camp at the same time. In a clump of date-palms near Metemneh we discovered a large number of nests, which already contained young birds on March 2nd. We afterwards found several others containing eggs in clutches of two and three on March 8th, 15th, and 21st. These are of the usual type of Kites' eggs, except that the ground-colour is pure white, and not pale blue, as it is in many specimens taken at Cairo. They vary considerably in size, from 53 by 41 mm. to 47 by 40·5 mm.

78. *CIRCUS MACRURUS* (S. G. Gm.).

56 ♂, 116 ♂, 399 ♀.

These three examples are all immature birds, just beginning to assume the adult plumage.

They were often seen flying backwards and forwards over the grassy plain above mentioned, more often in the evening than during the day-time. On one occasion we saw one of these birds chase a Crested Lark, but their food consists mostly of mice and other small mammals.

79. *CIRCUS PYGARGUS* (Linn.).

55 ♀.

Our single Montagu's Harrier was shot on February 20th, when it was hunting in company with an individual of the preceding species.

80. *MELIERAX GABAR* (Daud.).

172 ♀.

This Hawk was decidedly rare. Our specimen was sitting at the top of a high tree, chanting loudly.

81. **GYPS FULVUS* (J. F. Gm.).

Griffon Vultures were rarely seen.

82. **GYPS RUEPPELLI* (Brehm).

Rüppell's Vulture was seen on one or two occasions.

83. **VULTUR MONACHUS* Linn.

The Black Vulture was more common than either of the two preceding species. It is a magnificent bird when on the wing.

84. **NEOPHRON PERCNOPTERUS* (Linn.).

The Egyptian Vulture was exceedingly common and almost offensively tame. A nest, containing one egg and one young bird, was found on a ledge of a cliff near the Pyramids of Meroe on March 22nd. The nest was composed of sticks with a solid foundation of hyena's dung; it was lined with an extraordinary collection of hair of goats, gazelles, and hares, wings of sand-grouse, and scraps of cloth and paper.

85. **HELOTARSUS ECAUDATUS* (Daud.).

A Bateleur Eagle seen near the Pyramids of Meroe on March 22nd was the only Eagle that we saw in the Sudan. It came quite close to us, but was immediately attacked and driven away by a pair of Peregrine Falcons, which had a nest with three young on the top of one of the Pyramids.

86. *BUBULCUS LUCIDUS* (Rafin.).

75 ♀.

Buff-backed Herons were occasionally seen on the cultivated parts of the river-bank, often standing upon the backs of cattle.

87. **HERODIAS ALBA* (Linn.).

A single Great White Heron was seen on Tuti Island, opposite Khartum, on March 26th.

88. **NYCTICORAX GRISEUS* (Linn.).

Night-Herons were rarely seen.

89. **CICONIA NIGRA* (Linn.).

Black Storks were occasionally seen.

90. **CICONIA ALBA* Bechst.

White Storks were often seen in immense flocks flying northwards.

91. **PLATALEA LEUCORODIA* (Linn.).

Spoonbills were seen in one or two places south of Shendi.

92. **ANASTOMUS LAMELLIGERUS* Temm.

These strange-looking birds were sometimes seen standing in solitary fashion on the river-bank, sometimes flying southwards in large flocks.

93. **LEPTOPTILUS CRUMENIFER* (Cuv.).

The hideous Marabou was always to be seen if a horse or camel died in the neighbourhood. It is very expert in stealing choice pieces of carrion from the Egyptian Vultures.

94. *PHALACROCORAX AFRICANUS* (Gm.).

396 (sex?).

We did not see this little Cormorant at Shendi. Our specimen was obtained at Wad-Habushi, where the river is very swift and full of rocks.

95. **PELECANUS ONOCROTALUS* Linn.

Pelicans were sometimes seen flying northwards in enormous numbers; they fly in a single line at a great height. On one occasion a flock of several hundreds of these birds settled on a sandbank opposite to Shendi; unfortunately our boat grounded before we could get within reach of them either with a gun or a camera. They soar to a very great height, apparently without a single flap of the wings.

96. *GELOCHELIDON ANGLICA* (Mont.).

196 ♀.

Gull-billed Terns were seen almost every day flying down the river singly or in small parties. They were sometimes seen hawking for insects over the bean-fields and dhurra-fields.

97. **STERNA CASPIA* Pall.

Three or four pairs of this handsome Tern were seen flying about the ferry at Omdurman on March 26th; while a week or so before that date we saw it migrating northwards near Shendi.

98. **RHYNCHOPS FLAVIROSTRIS* (Vieill.).

This remarkable-looking bird was first seen at Wad-Habushi on March 18th, and a few arrived at Shendi on their northward journey on March 23rd. During the day-time they sit on an isolated sandbank or on a rock in the middle of the river; in the early morning and evening they fly rapidly over the water with a very graceful skimming action. They are very wary, and we did not succeed in obtaining a specimen.

99. *CHENALOPEX ÆGYPTIACA* (Briss.).

395 ♂, 407 ♂, 408 ♀.

Egyptian Geese were very common all along the river, generally being seen in pairs. They make a great noise when they come out of the crops in the early morning.

100. **DAFILA ACUTA* (Linn.).

Pintails were often seen in large flocks flying down the river.

101. **NETTION CRECCA* (Linn.).

Three Teal were once seen.

102. *PTEROCLES SENEGALLUS* (Linn.).

213 ♂, 214 ♂, 215 ♀, 379 ♀.

This large Sand-Grouse was very rare at Shendi compared with the next species. It was never seen in company with *P. exustus*, and seemed to prefer thick bush rather than the more open desert. The natives distinguish between the two birds, and call this one "Gutta Dahowi."

103. *PTEROCLES EXUSTUS* Temm.

157 ♂, 216 ♂, 218 ♂, 261 ♂, 310 ♂, 156 ♀, 217 ♀, 262 ♀.

Our Shendi specimens may be regarded as being typical *Pterocles exustus*; they do not agree with the form found on the White Nile by Mr. Witherby, and called by Mr. Hartert *P. e. somalicus* (Nov. Zool. vii. p. 28); the latter is a much brighter, more sandy, and smaller bird.

This Sand-Grouse was found in extraordinary numbers. It flies down to certain spots on the river to drink with

perfect regularity every morning. Considering how thinly these birds are distributed over the country—they are seldom seen in flocks, except when going to drink—it seems likely that many of them must come from very remote parts of the desert.

We found eggs of this bird on the 6th, 17th, and 23rd of March. They are laid on the bare ground; beyond a very slight depression there is no attempt at making a nest. The full number seems to be three. The ground-colour is creamy buff, and is covered with sharply defined rich brown markings and underlying spots of a pale grey colour. An egg taken after death from a bird shot on February 28th is marked with more pale spots than are our other eggs. Measurements: 35·6 by 26·5, 36·2 by 26·6, 36 by 25, 39 by 25 mm.

The native name for this bird is “Gutta.”

104. *COTURNIX COTURNIX* (Linn.).

The Quail was tolerably common at Shendi during our whole stay.

105. *EUPODOTIS ARABS* (Linn.).

The head and neck only of this bird were preserved. It was trapped in the desert by a native, who had adopted the usual trick of pulling out all the primaries. We often saw Bustards, presumably of this species, in the desert, but they always contrived to keep out of range; the chestnut axillaries are a good distinguishing character when the bird is flying.

106. *ÆDICNEMUS SENEGALENSIS* Swains.

386 ♂, 387 ♂.

Two of these birds were obtained at Wad-Habushi on March 18th. Their behaviour is very similar to that of the Norfolk Plover.

107. *HOPLOPTERUS SPINOSUS* (Linn.).

41 ♀, 380 ♀.

Spurwing Plovers were met with commonly all along the river-banks. They are extremely noisy during the night, and also during the day if their breeding-places are invaded.

A nest containing four eggs was found on March 18th. They resemble brownish eggs of *Vanellus vulgaris*, but are less pyriform and much smaller. The deep brown patches are all more or less longitudinal.

Measurements: 41.1 by 28.5, 40 by 27.5, 40 by 27.5, and 40 by 28.5 mm.

108. *PLUVIANUS ÆGYPTIUS* (Linn.).

12 ♂, 13 ♂, 97 ♀, 98 ♀, 257 ♀, 338 ♀, 360 ♀.

These pretty birds were fairly well distributed along the river-banks in small flocks. Towards the end of March they were evidently just on the point of breeding and occurred in pairs; the ovaries of the females were very much enlarged, and we often observed them scratching holes in the sand and then covering them up, as though they were burying their eggs. This habit is well known to the natives, who also are acquainted with the eggs, which they describe as being green. Curiously enough, they call this bird "Asfur el timsah," that is, "Bird of the Crocodile"; so there may be something in Herodotus's story of the *Trochilus* after all!

EXPLANATION OF PLATE I.

Fig. 1. *Cisticola aridula*, p. 16.

2. Egg of *Passer rufidorsalis*, p. 9.

3, 4. Eggs of *Caprimulgus eximius*, p. 20.

II.—*Notes upon the Osteology of Aramus scolopaceus*. By FRANK E. BEDDARD, M.A., F.R.S., Prosector and Vice-Secretary of the Zoological Society of London.

OPINIONS as to the exact systematic position of this curious bird have differed and still differ greatly. A list of the varying views that have been held at one time or another as to the relationships of *Aramus* is to be found in Fürbringer's 'Untersuchungen'*. From this it will appear that the bulk of current opinion is in favour of keeping the bird in the place which is assigned to it in the last edition of the 'Vertebrate List,' where it is joined with the Cranes, Bustards, *Cariama*, *Rhinocetus*, *Psophia*, and *Eurypyga* to form Mr. Sclater's

* 'Untersuchungen zur Morphologie und Systematik der Vögel,' &c. (Amsterdam, 1888), p. 1207.

Order Alectorides, of which Order it is furthermore considered to represent a distinct family. Prof. Fürbringer himself, though he discusses the general characteristics of *Aramus* under the heading "Aramidæ," comes to the final conclusion that it is to be placed as a mere subfamily of the family Gruidæ, of which all the Old World genera—*Grus*, *Balearica*, &c.—should constitute a second subfamily, Gruinæ. Even with this reduction the importance attached to *Aramus* as a distinct type of bird appears to me to be due to a slight exaggeration of its peculiarities. A study of the osteology has convinced me that it does not help to explain the structure of the genus to regard it as extremely distinct from other Cranes, using this word to include the Gruidæ only. If *Aramus* is to be separated, and given family—or subfamily—rank, then it will be necessary to isolate at least *Balearica* in the same way, and possibly also *Tetrapteryx*. No advantage appears to be gained by the splitting up of so clearly definable a family as that of the Gruidæ, of which *Aramus* is an outlying member, and, even as such, not far removed from the remaining genera.

My conclusions, in fact, completely bear out the view of the late Mr. Seebohm*, who placed *Aramus* as a genus of the family Gruidæ in his suborder Grallæ. As to the particular position which the genus holds within the family, I shall have in the course of the following pages to point to a number of somewhat striking likenesses between it and the African genus *Balearica*, which in external appearance is as unlike *Aramus* as any other genus of the family, or indeed even more unlike. Without, however, insisting too strongly upon these points of resemblance as indicating a special affinity, I may remark that alliances between South-African and South-American animals have been shown to exist in a number of groups.

The anatomy of *Aramus* has been dealt with and described by a number of naturalists. The muscles and viscera, with some parts of the skeleton, have been described by the late Mr. Garrod†, who quotes earlier authorities in his memoir.

* 'Classification of Birds' (London, 1890), p. 39.

† "On the Anatomy of *Aramus scolopaceus*," P. Z. S. 1876, p. 275.

I have already referred to Prof. Fürbringer, in whose general work upon Birds are a number of osteological details. I have myself* subsequently referred to a few osteological facts in considering the affinities of *Psophia* to other Crane-like birds, and the genus is not passed over in the general works of Dr. Gadow† and myself‡. An account of the alimentary tract has been communicated by Dr. P. Chalmers Mitchell to the Linnean Society of London, and will probably be published before the present observations appear in print.

The skeleton, with which alone I am concerned in the present communication, has been described and figured to some extent by Eyton in the 'Osteologia Avium' ||, by Garrod in his memoir quoted below, and by Fürbringer and myself. While these authors have made known the general facts which bear upon the systematic position of the bird, a number of details have not been discussed, some of which have a bearing upon the relationship of *Aramus* to the Cranes.

§ SKULL.

I shall not give any elaborate description of the skull, which has been depicted from two points of view by Garrod, and also in the general figure of the entire skeleton by Eyton. In being schizognathous and schizorhinal, in having large free lacrymals not united to the prefrontal processes of the ethmoid, in having but slight furrows for the nasal glands, and, finally, in the possession of occipital foramina, the genus *Aramus* agrees with the Gruidæ alone among its possible allies; both the Rallidæ and the Limicolæ differ in one or more of the above-stated characters, which are only combined in the Gruidæ. It seems to be unnecessary to take any other group of birds into consideration. Besides these general points of resemblance to *Grus* and the Gruidæ in general, the skull of *Aramus* shows a few minutiae of

* "On the Structure of *Psophia*," &c., P. Z. S. 1890, p. 329.

† "Aves" in Bronn's 'Klassen und Ordnungen des Thierreichs.'

‡ 'The Structure and Classification of Birds' (London, 1898).

|| Plate xiv. K and pl. xxvii. fig. 2.

structure in which it differs from its allies. These features, on the whole, produce a further likeness between the skull of *Aramus* and that of the aberrant Crane *Balearica*. Thus the pterygoids, though expanded as in *Grus* at their articulation with the palatines in front, have no traces that I can discover of basipterygoid facets. In *Grus* these basipterygoid facets are not properly developed; but, as in many other birds which possess rudiments of them, they are represented by a small process of bone of irregular form, and are not expanded into an articular surface for the reception of the pterygoid bones. In this peculiarity of the skull the genus *Balearica* agrees with *Aramus*; while in neither are there traces of the basipterygoid facets. One would assume therefore that the two genera which have just been mentioned are so far more specialized than the more typical Cranes. The shape of the maxillo-palatine plates is not the same in *Aramus* and in *Grus*: in *Aramus* these plates are of the nature of swollen bullæ, and very thin-walled; in *Grus* each plate is a thin, shell-like, concave structure, the concavity being outwards; they are, moreover, much larger in *Grus* than in *Aramus*. It is perhaps important to note that *Balearica*, again, on the whole, agrees with *Aramus*.

The remaining feature of difference between *Aramus* and *Grus*, which is noticeable on the ventral aspect of the skull, concerns the palatines: in *Grus* the ridge upon the ventral surface of these bones is deep, and is continued quite to the end of them, to where they articulate behind with the pterygoids; in *Aramus* the ridge is, of course, present, but it stops considerably short of the pterygoid end of the palatines. In this feature it happens that *Aramus* does not approach *Balearica*. The last-mentioned genus has these bones formed as in *Grus*.

When the skull of *Aramus* is viewed laterally, the nostrils are seen to be not so clearly cut anteriorly as are those of *Grus*, which end in a definite rounded margin. In *Aramus* a kind of curtain of bone descends from above which overshadows and partly obliterates the anterior part of the orifice of the nostril, thus detracting from the definiteness of its

outline. On the same aspect of the skull the quadrates are completely visible, as is also the case with the quadrates of the Crane *Balearica*. In *Grus*, on the other hand, there is a slight projecting bar of bone belonging to the squamosal, which has grown over the articular end of the quadrate between its two heads; this to some extent conceals the actual articulation of the quadrate when the skull is placed in an accurately horizontal position and viewed from the side. The same small bar of bone, it is true, does exist in the case of the two genera *Aramus* and *Balearica*; but it is much smaller and is not effectual in concealing the quadrate articulation.

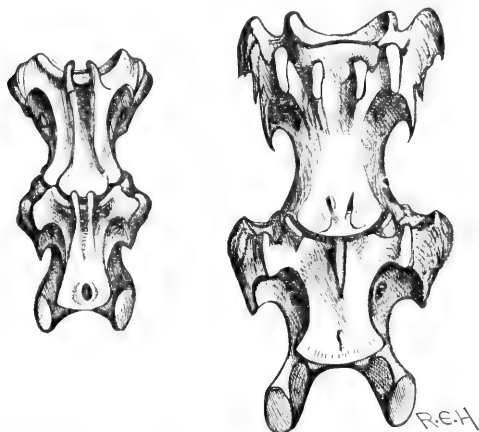
§ VERTEBRAL COLUMN.

Aramus has altogether 17 cervical vertebræ, thus disagreeing with at least many other Gruine birds, where 19 or 20 is the prevailing number; *Psophia*, however, and *Eupodotis* agree with *Aramus*. As the cervical vertebræ are apt to be variously reckoned by those who deal with the skeletons of birds, it may be as well to state that in the foregoing enumerations I have considered as "cervicals" all those vertebræ which lie in front of that which bears the first complete rib: while by complete rib, I understand one that articulates with the sternum. The atlas vertebra, as in *Grus*, is merely notched for the odontoid process of the axis. There is not a complete foramen.

On the cervical vertebræ the catapophyses, as is well known, are often, and indeed generally, of considerable use in distinguishing or uniting allied birds; they often vary very characteristically from family to family or it may be from genus to genus. In *Aramus* the arrangement of these ventral processes of the centra is as follows:—The catapophyses are first recognisable as quite independent on the 6th vertebra (counting in, of course, the atlas). From that vertebra as far as the 13th the catapophyses are clear and distinct and approach somewhat, being nearer to each other on the last three vertebræ of the series referred to; the approximation, however, is not clearly marked, and they are far indeed

from forming by their union a catapophysial canal, such as is to be found on the neck-vertebræ of many birds. It often happens that the vertebræ which immediately follow that which bears the last pair of catapophyses are furnished only with a single median hypapophysis, the transition being thus perfectly abrupt between the paired and unpaired ventral median process of the vertebral centra. Now, in *Aramus* there is a transition; for the fourteenth vertebra, although it has indeed but a single median hypapophysis, has that hypapophysis distinctly bifid at its free extremity, which

Fig. 1.



Neck-vertebræ of *Balarica* (right-hand figure) and *Aramus* (left-hand figure). Nat. size.

naturally suggests that it is the product of a fused pair of catapophyses. This process is not bifid upon the remaining hypapophyses of the cervical series. We may now compare the conditions which obtain in *Aramus* with those which prevail in other genera of the Gruidæ.

In *Grus carunculata*, which will serve as a type of the restricted genus *Grus*, the conditions are really practically identical. The only difference is associated with the larger number of the cervical vertebræ of this bird. In it the last vertebra which possesses paired catapophyses is the

14th instead of the 13th. Moreover, the bifid state of the otherwise unpaired hypapophysis of the succeeding vertebra—i. e., the 15th of the entire series—is more marked than it is in *Aramus*; this is naturally still more suggestive of the origin of the unpaired hypapophysis from paired catapophyses than is the case of the 14th vertebra of *Aramus*.

In *Tetrapteryx* (or *Anthropoides*) *paradisea* there are exactly the same number of cervical vertebræ which possess catapophyses as in *Grus carunculata*, those of the 15th being quite as marked as are those of the 14th.

Balearica, in the points which are now being dealt with (fig. 1), does not show any special likeness to *Aramus*; it is indeed a step further on the Crane-side. In this bird there are in all, it will be remembered, 20 cervical vertebræ, instead of the 19 which characterize the more typical Cranes. As the cervical series is thus extended by one vertebra, it is natural to find that the arrangement of the catapophyses corresponds. In *Balearica* it is thus the 16th vertebra instead of the 15th which bears the last pair of catapophyses.

There is one remaining feature in the structure of these catapophyses which requires attention and furnishes useful comparisons. In *Balearica* the first pair of them is upon vertebra 6, as in the case of *Aramus*, already stated above. It will be seen, however, immediately, that these catapophyses are not certainly the equivalents of those which lie in *Aramus* upon the same vertebra. These processes in *Balearica* lie rather near to the middle ventral line of the centrum; they are placed behind a very deep ventral fossa which excavates the centrum of this vertebra just behind its surface for articulation with the preceding vertebra. This deep ventral fossa is not to be seen upon the next or upon any of the succeeding cervical vertebræ; there is no differentiation of the anterior from the posterior part of the centrum. In correspondence with, or at any rate associated with, this change in the form of the ventral surface of the centra the catapophyses move away from the position which they occupy on the sixth vertebra; they move forwards and come to have at the same time a more lateral position, or, to state the matter

more accurately, they appear to do so. For it seems quite possible that the first pair of median central outgrowths which have been spoken of above as "catapophyses" are not really the equivalents of the succeeding catapophyses. Although the two processes of the sixth vertebra enclose a gutter between themselves, yet their position is rather different from that occupied by the catapophyses upon subsequent segments. Moreover, the non-correspondence of the ventral paired processes of vertebra 6 in *Balearica* with the catapophyses lying upon the vertebræ which follow would seem to receive some support from a consideration of the nature and relations of processes upon corresponding vertebræ in *Tetrapteryx paradisea*; in the latter Crane, unquestionable catapophyses begin upon the sixth vertebra, but on the vertebra in front of this is a slightly bifid median spine lying behind the fossa already referred to. It might, of course, be suggested that this spine is the equivalent of the separate ventral processes of the sixth vertebra of *Balearica*. If we had only these two types to consider, the matter would be at least difficult to settle; but it seems to me that an examination of *Grus carunculata* solves the whole difficulty. In this Crane the first pair of catapophyses are upon the 5th vertebra; they are situated behind the fossa, but they are widely apart, so as to lie rather laterally as well as ventrally. These catapophyses belong to the category of the ventral processes which are not undoubted equivalents of those upon subsequent segments, but it will be observed that they approach them in the fact of their being more lateral in position.

Now, on the next vertebra, *i. e.* the sixth, there are lateral processes which no one could possibly refuse to regard as true catapophyses; and yet this vertebra has the median fossa of the one which precedes it. It is rather less obvious, but still it unmistakably exists. The difficulty therefore of homologizing these processes seems to be removed by an examination of the present species. It seems permissible then to look upon the catapophyses as "divided hypapophyses," which become more and more widely divaricated and finally

again fuse into a single median hypapophysis, rather than as detached processes from the sides of the ventral precentral fossa or parapophyses *. I may conclude this particular part of the subject by mentioning that *Aramus* agrees with the Cranes in having upon the fifth vertebra, behind the fossa already spoken of, a pair of low elevations which undoubtedly correspond to those of other Cranes, and are, in my opinion, the first pair of catapophyses. I shall not go into a comparison between *Aramus* and birds other than Cranes with regard to the matters that have just been treated of; I shall simply remark that in no bird which I have examined from this point of view are the likenesses to *Aramus* more considerable than are exhibited by the true Cranes. Indeed the similarity, as will have been apparent from the foregoing descriptions, almost, if not quite, amounts to identity.

Aramus has seven dorsal vertebræ, of which the last is fused with the sacral series, and is, as is shown in the accompanying figure (fig. 2, p. 42), covered by the ilia. The first, second, and third dorsals are also fused with each other; this fusion is complete, and there are no demarcations between the spinous processes of these vertebræ any more than there are between their centra: I could detect no traces of the sutures. At either end this series of three vertebræ is quite free from those adjacent. Other Cranes shew some differences from *Aramus* in the degree of the fusion of these vertebræ of the dorsal series.

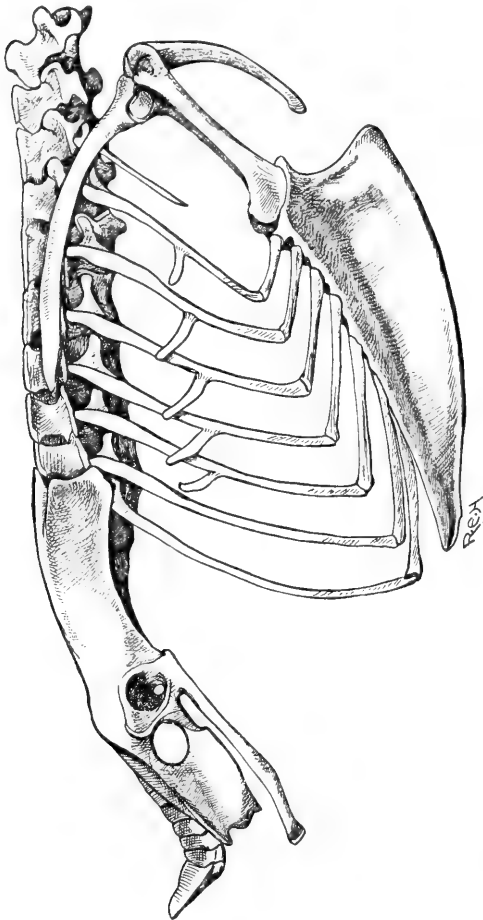
In *Grus carunculata* there is a ventral fusion which is not quite complete, and, moreover, only involves dorsal vertebræ 2 and 3. Dorsally, save for irregular splints of bone, which confer a practical rigidity upon this part of the vertebral column, the vertebræ in question are not fused with each other at all.

Grus australasiana exhibits a further advance upon *G. carunculata*. As in *Aramus*, there are three dorsal vertebræ which are fused together; but the fusion is undoubtedly partial, and they are only completely fused as

* In the Ostrich, for example (see Mivart, Trans. Zool. Soc. viii. p. 385), the catapophyses do appear to arise from the parapophyses.

regards their centra. The spinous processes are quite distinct and not fused at all; but this dorsal region of the vertebral column is doubtless as immobile as in *Aramus* by reason of

Fig. 2.

Thorax of *Aramus* ($\frac{3}{4}$ nat. size).

the fact that numerous spicules of bone lie across the junctions of the vertebræ, so that the arrangement is, so far, as in *G. carunculata*.

Tetrapteryx paradisea is characterized by a condition of

the three dorsal vertebræ which is precisely like that in the last-mentioned species: the vertebræ are united ventrally but not dorsally. In *Balearica* we again find an approximation towards the conditions observable in *Aramus*. Three dorsal vertebræ, which are, as in the other types, the first, second, and third of the series, are completely fused below; it is true that the fusion above is by no means so complete as in *Aramus*, but there are considerable bridges of bony matter uniting the spinous processes. The difference in these points between *Aramus* and *Balearica* is indeed not nearly so great as between either of these genera and *Grus* or *Tetrapteryx*. *Aramus* is only a short stage in front of *Balearica*; and both genera, it will be observed, must be regarded as comparatively specialized Cranes, since it cannot be doubted that the primitive arrangement is for the vertebræ to be separate and not fused at all. Such a point of resemblance, however, clearly need not be considered as one of affinity; no one can doubt that a more complete fusion between certain vertebræ is a specialization which might readily have been acquired several times independently.

With regard to this fusion between separate vertebræ of the dorsal series, I may observe that *Psophia* shews an advance upon *Aramus* and *Balearica*: in the former genus the fusion is so complete that even the intervertebral nerve-foramina are almost obliterated; those of *Aramus* are not nearly so much so.

There are some further minutiae of structure of the last cervical and the first dorsal vertebræ upon which it is requisite to insist, inasmuch as they offer points for discriminating *Aramus* from its allies among the Cranes.

In this genus the last two cervicals have, as has been stated, a single median hypapophysis. In addition to this process, which is strongly developed, there are two small lateral hypapophyses, one on either side of the median downgrowth; these two processes approach a little nearer to the ventral median line on the last than on the penultimate cervical vertebra. The first dorsal vertebra of *Aramus* is marked off from the cervicals by the fact that the two lateral processes cease to arise independently from the

centrum ; they ascend, as it were, the median single hypapophysis, which thus comes to possess a trifid structure. On the next dorsal vertebra the hypapophysis is no longer trifid, it is bifid. This change is due to the disappearance of the original median hypapophysis, which is replaced by the two lateral processes. The succeeding dorsals bear the merest traces of hypapophyses.

Now, in the genus *Grus* the conditions are a little different : in *Grus carunculata* the last four cervical vertebræ possess the two lateral hypapophyses, which, in successive vertebræ, gradually approach the median hypapophysis ; the latter, however, is so slightly developed that on the first dorsal vertebra there are rather three hypapophyses than one strong trifid ventral process, such as we find in *Aramus*. On the vertebræ which follow, the processes in question are barely discernible ; they are indeed not recognisable at all after the second. It will be noted, however, that *Aramus* is essentially like the other Cranes in these points ; the arrangement in them is substantially that of *Aramus*, shewing indeed but the minutest differences of detail. Among other Cranes there is the same reduction in importance and size of the hypapophyses of the vertebræ in question ; *Aramus*, therefore, slightly exaggerates the Gruine characteristics, and so far it approaches two other anomalous Gruine genera, viz. *Rhinochetus* and *Psophia*.

The "sacral" region of the vertebral column is shorter in *Aramus* than in *Grus*, though only by one vertebra, so far as I can ascertain from a comparison of skeletons. The relations of the vertebræ of the pelvic region leave no possible doubt in the mind but that *Aramus* is most plainly a Crane in the strict and limited sense of the word, *i. e.* a member of the restricted family Gruidæ ; it differs precisely as do the Cranes from such outlying Gruine forms as *Psophia*, *Rhinochetus*, *Cariamæ*, and the Bustards. In *Aramus*, as in the Cranes, there are six vertebræ in front of the lateral acetabular fossæ*. Four or five vertebræ (I cannot make absolutely certain without injuring my skeleton of *Aramus*)

* I adopt this term from Mivart (Trans. Zool. Soc. x. p. 327).

occupy the region of these fossæ; behind the fossæ six (*Aramus*) or seven (*Grus*, *Balearica*) vertebræ are to be counted in front of the free caudals. Here is a minute point in which *Balearica* differs from *Aramus* and agrees with the more typical *Cranes*.

The caudal region of the vertebral column which follows the series of dorsals, lumbar, sacral, and caudal, which are sometimes termed "sacral," is slightly different in *Aramus* from the corresponding region in *Grus* and *Tetrapteryx*. In the two last-named genera there is an additional vertebra, which is, of course, present in *Aramus*, but is there fused with the "ploughshare" bone; *Aramus* has therefore only six apparent free caudals, whereas *Grus* and *Tetrapteryx* have seven. Between all the free caudals in *Aramus* there are well-developed intercentra; these are relatively large and single bonelets.

I have dealt at some length with the characters of the vertebral column, since, so far as I am aware, there has hitherto been no comparison of these bones together in the genera of *Gruidæ* with which I deal. It is clear that it is worth while to compare them, inasmuch as it should be evident that by these characters the essentially Gruine features of *Aramus* are made apparent, and at the same time certain differences sufficient to discriminate it from other *Gruidæ* become obvious.

§ RIBS.

As has been correctly stated by Prof. Fürbringer, in the tables of osteological characteristics of the different orders of birds which conclude his systematic summary of the group, there are six pairs of ribs in *Aramus* which reach, and articulate with, the sternum. In the skeleton studied by myself this is the case; but in addition a seventh pair actually reaches and touches the sternum, though not articulating with it. This seventh pair (see fig. 2, p. 42) is pressed close in between the rib in front and the sternum, but it is easy to be certain that there is no actual articulation. The sixth and seventh ribs, however, are in close adherence at the articulation of the former. This last rib

is naturally the one which is covered by the ilium at its origin. The first five of the complete ribs have uncinate processes, of which the three in the middle are the longest. These uncinate processes are so long that they overlap the rib behind. The rib-formula of *Aramus* will be therefore :

$$r + R + 6 + 1 \text{ (lumbar).}$$

This may be compared with the formulæ of some other Cranes :

$$\textit{Grus carunculata} : \quad r + R + 7 + 1 + r.$$

$$\textit{Tetrapteryx paradisea} : \quad r + R + 6 + 2.$$

$$\textit{Balearica chrysopelargus} : R + 7 + 1 *.$$

I should explain that "r" signifies a small cervical rib not reaching the sternum, "R" a larger cervical rib still not reaching the sternum, the following figure (6 or 7 in the cases described) refers to the true dorsal ribs which articulate with the sternum, the next figure (1 in the case described) a dorsal rib which does not reach the sternum, and, finally, "r" a more rudimentary rib behind this ; both of the latter arise from vertebræ fused with the sacral series, and may therefore be termed lumbar ribs.

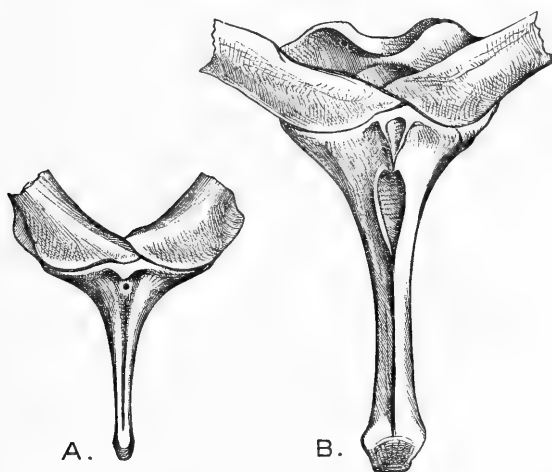
§ SHOULDER-GIRDLE AND STERNUM.

These parts of the skeleton have naturally been dealt with by Fürbringer, and therefore it will not be necessary for me to treat them with any elaboration. There is, however, one point of some little interest in the structure of the sternum with which I wish to deal : it is illustrated in the accompanying figure (fig. 3, p. 47), the two drawings in which represent the sternum of *Aramus* (A) and that of *Balearica* (B) viewed from the front, the keel being vertical in position. The spina externa of the sternum is asserted by Fürbringer, in his comparative tables of osteological characters on pp. 1582, 1583, of his 'Untersuchungen,' to be wanting in *Aramus*. I cannot altogether agree with him, though undoubtedly the process in question is so small as to be

* For formulæ of some other Crane-like birds see Beddard, P. Z. S. 1890, p. 439.

practically absent. In my specimen, as will be seen from the figure, there is a very small, but still very distinct, spina externa which lies in the proper position for such a process and may be compared with the admittedly present spina externa of the sternum of *Balearica*; these facts may be readily gathered from an inspection and comparison of the two figures submitted herewith (fig. 3, A & B). Now, in other Cranes this spina externa is large, but it bears a relation to the amount of complication shown in the windings

Fig. 3.



A. Front view of the keel of *Aramus*.
 B. " " *Balearica*.

of the trachea in those birds, where the tracheal loops may excavate the front end of the sternum; for example, the spina externa is very large in *Grus australasiana*, it is less in *G. carunculata*, and very small in *Balearica*, which, as a matter of fact, has not got a looped trachea. Associated with the looped trachea is the excavation of the front of the sternum, which is well known. Now it is highly interesting to note that in *Balearica*, as pointed out by Mr. Tegetmeier*, there is a small but deepish depression just below the small spina externa, which is most evidently a vestige, and that

* 'The Natural History of the Cranes' (London, 1881), p. 81.

not by any means minute, of this groove for the reception of a coiled trachea. I am disposed, therefore, to conclude that *Balearica* is derived from a Crane that had a coiled trachea and a corresponding deep excavation of the front end of the sternum. Now it is a point of some little importance, in estimating the systematic position of *Aramus*, to compare the conditions to be seen in this particular region of the bird with those observable in the Cranes. A glance at the figure already referred to (fig. 3, p. 47) will shew that in *Aramus* the front end of the sternum is excavated in the same way; but the excavation is much shallower, though even more extensive, than in *Balearica*. Furthermore, at the anterior end of the excavation, just below the rudimentary spina externa, is a deep hole (shown as a black circle in the figures) which has its precise counterpart in *Balearica*, though in the latter bird the hole in question is larger and deeper. It cannot, I think, be doubted that we have in this Crane-like bird a vestige of a former condition, in which the sternum was grooved and excavated in front for the reception of the tracheal coil. Here, again, I do not lay any special stress upon the likeness which *Aramus* bears in these peculiarities of structure to *Balearica*. It is readily credible that the tracheal coiling and the corresponding sternal excavation may have been independently lost a dozen times; but in any case both birds have progressed along similar lines.

Nor can I find any evidence that other Crane-like birds have recently lost their tracheal coils and are therefore to be looked upon so far as equally nearly allied forms of Gruine birds. In *Psophia*, *Cariama*, *Rhinocetus*, and *Houbara* the front end of the sternum—the region which is under discussion—is, it is true, flattened, but it is not in the least hollowed; and if it were to be suggested that flattening is simply a further, and not a large, exaggeration of the slight hollowing to be found in *Aramus*, it might be replied that in the birds mentioned the middle line of the region of the sternum, with which we are at present concerned, is traversed by a quite distinct ridge, which runs up to, and indeed up, the spina externa. All these facts combine, in my opinion,

to shew the justice of my comparisons of this part of the sternum in *Aramus* with that in the Cranes *sensu stricto*.

I may finally observe that the coracoids of *Aramus* overlap at their articulation, as they do in *Balearica*, but not in *Grus*.

§ PELVIS.

The pelvis of *Aramus* (fig. 2, p. 42) presents no marked divergences from that part of the skeleton in *Grus* and *Balearica*; nevertheless it can be readily distinguished by certain characteristics of its own. The chief difference in the pelvis of these various Gruine birds consists in the ratio of the pre-acetabular to the post-acetabular half of the ilium; this is shown very plainly in the following series of measurements:—

	mm.	mm.
<i>Aramus scolopaceus</i>	44	40
<i>Grus carunculata</i>	81	81
<i>Grus australasiana</i>	86	92
<i>Tetrapteryx paradisea</i>	75	82
<i>Balearica chrysopelargus</i>	75	79

The measurements were in every case made from the anterior end of the ilium to the anterior edge of the acetabular cavity, and again from the anterior edge of the acetabular cavity to the posterior end of the ilium. It is plain from them that *Aramus* has a relatively longer pre-acetabular region than has any other Crane. These measurements do not bring out any resemblance between *Aramus* and *Balearica*; on the contrary, *Balearica* is in the proportions of the two halves of the pelvis much more closely allied to *Tetrapteryx*. I may add that in these same proportions *Aramus* is less Crane-like than are *Psophia*, *Cariama*, and *Rhinochetus*; but it will be noted also that the true Cranes differ very considerably among themselves in the pre-acetabular and post-acetabular lengths. The breadth of the ilium of *Aramus* is greater in proportion to the length of the same than in any Crane of which I have made measurements, with the exception of *Balearica*. This will be

apparent from the following series of measurements, which are based upon taking the entire length of the ilium from its anterior extremity to the end of its attachment to the vertebral column behind at 100, the breadths being calculated as percentages. The measurements are :—

<i>Balearica chrysopelargus</i>	62·4
<i>Aramus scolopaceus</i>	61·3
<i>Grus australasiana</i>	56·5
<i>Grus carunculata</i>	54·3
<i>Tetrapteryx paradisea</i>	51·6

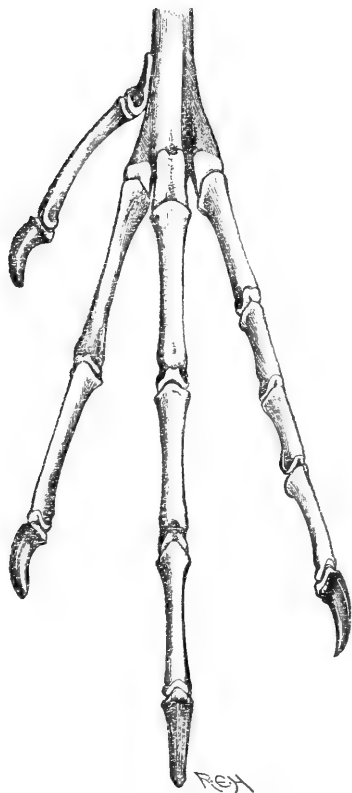
It is clear that the most marked break in this series, which is arranged in numerical sequence, is between *Balearica* and the rest of the true Cranes; furthermore that *Balearica* is very close to *Aramus* in these proportions. If the Cranes were to be classified by this character alone, *Aramus* and *Balearica* would be placed together and contrasted with the remaining genera.

§ THE HIND LIMB.

I do not find my measurements of the femur, tibio-tarsus, and tarso-metatarsus of *Aramus* quite in accord with those given by Fürbringer. He gives the respective lengths as 23, 39·5, and 37·5, the length of the entire limb being considered as 100. I find in my skeleton of *Aramus scolopaceus* that the actual lengths are—femur 3 inches, tibio-tarsus 6 inches, and tarso-metatarsus $4\frac{1}{2}$ inches; or, to make use of the more accurate system of measurement in millimetres, femur 81 mm., tibio-tarsus 152 mm., and tarso-metatarsus 112 mm. These lengths give, when reduced to percentages of 100 for the whole limb, 23·5, 44, and 32·5. The differences in the measurements of Fürbringer and myself are not very great; but they are of importance to me as showing a closer resemblance to *Balearica* than would appear from the measurements of Fürbringer. The various segments of the hind limb of *Balearica* measure in millimetres 120, 263, and 230; reduced to parts of 100 these measurements become 19·6, 42·9, and 37·5 (not going beyond one place of decimals). This is clearly a series of measurements which

brings *Balearica* very close to *Aramus*; in *Grus carunculata* the tibio-tarsus and tarso-metatarsus are respectively $13\frac{1}{2}$ and 12 inches long, which gives quite different proportions. It has been pointed out that the great length of the toes in *Aramus* is a Rail-like character. They are undoubtedly

Fig. 4.

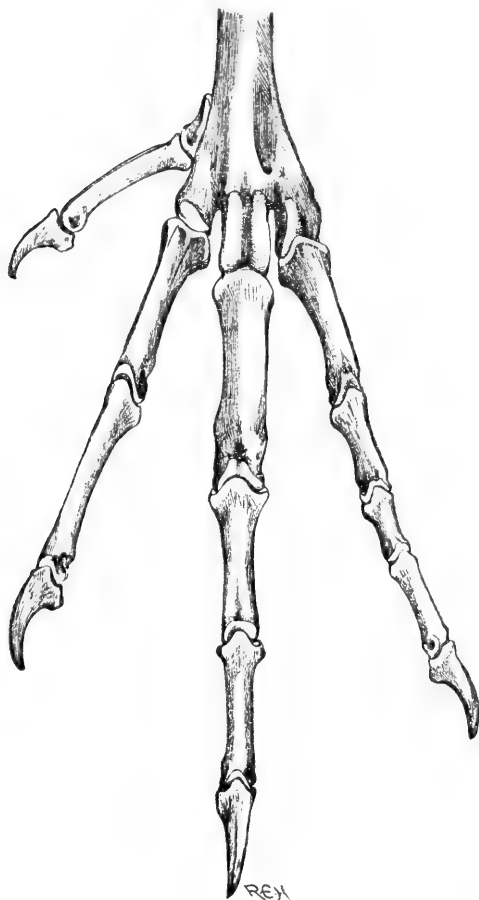
Foot of *Aramus* ($\frac{3}{4}$ nat. size).

longer than those of the Cranes, but they shew other differences which I desire to point out as a final contribution to the osteology of this bird.

The figures which accompany this description (figs. 4 & 5, pp. 51, 52) represent the feet of *Aramus* and of *Balearica*;

Balearica is here selected as representing the typical Cranes, for it shews no approximation to *Aramus* in the characters to which I am about to call attention. It will be observed

Fig. 5.

Foot of *Balearica* ($\frac{3}{4}$ nat. size).

that in *Aramus* the length of the phalanges of the several toes differs from that in *Balearica*: in the former genus the second digit has its first phalanx of equal breadth, or nearly so, to the corresponding phalanx of digit iii.; moreover,

the first phalanx of the second digit is distinctly longer than that of the third digit. In *Balearica* and *Grus*, on the other hand, the first phalanx of the third digit is distinctly the longest as well as the broadest.

In the foregoing pages I have added a few fresh details to our knowledge of *Aramus*, which shew how very closely related the genus is to the other Gruidæ, and which help to forbid its separation as the type of a family or subfamily distinct from them. The most important of these further likenesses between *Aramus* and *Grus*, &c., concern the vertebræ and the vestiges of an excavation upon the front edge of the sternum (see above, fig. 3, p. 47), which is to be compared to the deep furrow which in the genus *Grus* lodges the windings of the trachea ; on the contrary, some few of the fresh facts recorded in the present communication serve to distinguish *Aramus* from other Cranes. Of these differences a large proportion serve at the same time to cement more closely a special alliance between *Aramus* and the at least equally aberrant Crane *Balearica*. Such likenesses as are shown by the great breadth of the pelvis in the two genera, by the proportions of the segments of the hind limb, by the absence of the extension of the squamosal so as to conceal the quadrate, and the overlapping of the coracoids at their articulation with the sternum, seem to be so far genuine points of likeness which bear no obvious relation to adaptation to similar needs ; but they appear to be too few and of insufficient importance to afford a base for any claim to very near affinity between the two widely separated genera. There are, however, a number of other points of resemblance which are more striking : these are the loss of even the rudiments of the basipterygoid processes, the slightly grooved anterior edge of the sternum with its anterior foramen, and the more complete fusion of the first to the third dorsal vertebræ ; but these features of likeness between *Aramus* and *Balearica* might be interpreted as simply a parallel advance in each case from the structure of the more generalized Cranes of the genus *Grus*. Fürbringer considers that the genus *Aramus*,

on the whole, should be placed beneath the more typical Cranes, though it may shew points of specialization. Osteologically, it appears to me that *Aramus* is distinctly more specialized than its allies ; in any case I am convinced that it is necessary to leave it as a genus of the family Gruidæ, and not to create for it a special family or subfamily. Its main claim to be considered as nearly related to *Balearica* appears to me to lie in the fact that both these genera have been specialized from the more typical Crane-structure along the same lines.

III.—*Further Information on two recently described Species of Passerine Birds.* By JOSEPH I. S. WHITAKER, F.Z.S., M.B.O.U.

(Plates II. & III.)

IN the 'Bulletin' of the British Ornithologists' Club for 1901 (vol. xi. p. 52) a new species of Long-tailed Titmouse from Sicily was described by me under the name of *Acredula sicula*, specimens of the bird having been exhibited at the meeting of that Club held on the 20th of March, 1901.

Having since obtained further information respecting this interesting addition to our European Ornis, and particularly as regards its distribution and breeding in Sicily, I think it worth while to publish the result of my investigations in 'The Ibis,' and at the same time to give a figure of the new bird.

As will be seen by Plate II., the Sicilian Titmouse greatly resembles *A. caucasica*, but, as mentioned in the 'Bulletin,' it differs from that species in its smaller size, and also, to a certain extent, in the colouring of its plumage.

The following are the respective measurements of the two species, as given in the 'Bulletin' of the B.O.C. :—

A. sicula ex Mus. J. I. S. Whitaker, Palermo :

♂ ad. Total length 5·0, wing 2·25, tail 2·9, tarsus 0·6.

♀ ad. " " 5·0, " 2·20, " 2·9, " 0·6.

A. caucasica ex Owens College Mus., Manchester :

♂ ad. Total length 5·5, wing 2·45, tail 3·3, tarsus 0·7.

♀ ad. " " 5·5, " 2·45, " 3·2, " 0·7.

The sexes of *A. sicula* appear to be identical, or nearly so, in their plumage, colouring, and markings, as well as in their soft parts and measurements. The young of this species, as shown in the accompanying Plate, differs from the adult bird in having the greater part of the upper plumage brown, while the centre of the crown and the fringes of the scapulars and secondaries are whitish; moreover, on the underparts the rose-colour on the flanks and crissum is less pronounced. The respective measurements of old and fully-grown young birds seem to be the same, except with regard to the tail, which is rather longer in the latter, owing perhaps to the absence of wear and tear.

With respect to the distribution of *A. sicula* in Sicily, I may say that it appears to occur only in the more wooded inland districts of the island, and at elevations varying from 700 to 1500 metres above sea-level, according to the time of year and according to the more sheltered or more exposed position of the woods frequented. On the sea-coast and in the low-lying districts of the island the species appears not to be found. The woods frequented by this Titmouse vary in character according to their altitude, those lower down being mainly composed of deciduous and evergreen oaks (*Quercus robur*, *Q. suber*, and *Q. ilex*), chestnuts, and olive-trees, while the higher forests are almost exclusively of deciduous oak and beech, although the ilex oak also flourishes on some of the higher hills. Apparently, however, the character of the woods is immaterial to the birds, which seem as much at home among the low-growing olive-groves as they do among the lofty forest oaks.

The first examples I obtained of *A. sicula* were procured at the beginning of February in the Bosco di Fienzza, a well-wooded inland district, about 750 metres above sea-level, lying to the south of Palermo. The woods in this neighbourhood are composed chiefly of oak, both evergreen and deciduous, with a few elms and ash trees, and with a luxuriant undergrowth of low-growing plants, mostly of the *maquis* description. Throughout the month of February and the early part of March this Titmouse continued to occur in the Fienzza woods more or less plentifully, but by

the end of March it was no longer to be met with there, and I then found it and obtained specimens on Monte Aspro, in the Madonian range of mountains, at an altitude of about 1000 metres above sea-level. The Monte Aspro woods, which consist almost entirely of deciduous oak, with an undergrowth of bracken and other ferns, are remarkably fine, several of the trees being veritable giants. Owing, however, to the fact of the district being somewhat inaccessible, it is but little known to the ordinary tourist travelling in Sicily, and few visitors to the island have any idea of the existence of these mountain-forests, which in extent and beauty rival those of more northern latitudes. According to historians, the greater part of the mountainous region of Sicily was once clothed with such primeval woods, which the ruthless hand of man has gradually swept away and reduced to their present relatively insignificant proportions.

During the first fortnight of April I obtained further specimens of *A. sicula* from Monte Aspro; but by the middle of that month comparatively few of the birds were to be met with there, and by the end of it they seemed to have entirely left the locality and to have moved to some higher woods on the same range of mountains. Here, I feel sure, they must have settled down for the breeding-season, although my collector failed to find any of their nests, nor indeed did he meet with the birds themselves on a subsequent visit which he paid to the neighbourhood about a month later. During the month of June, however, I sent him to another district lying to the east of Monte Aspro, but still in the Madonian or, more properly, the Nebrodian range of mountains; and here he found *A. sicula* comparatively numerous, and was able to secure specimens of fully-grown young as well as of adult birds. He also found two nests, both containing half-fledged young birds, which were probably of the second brood. According to my collector's report, the nests were placed in the forks of olive-trees, at a height of about eight feet from the ground, and were domed at the top. The last-mentioned district, which

surrounds the small town of Mistretta, in the Province of Messina, has an elevation varying from 900 to 1300 metres above sea-level, and its woods are chiefly of cork-, oak-, chestnut-, and olive-trees. I was somewhat surprised to find *A. sicula* at an elevation of below 1000 metres in the month of June; but the slopes of the hills near Mistretta have a northern aspect, and the temperature is probably never very high there. On the approach of autumn *A. sicula* returns to its winter-quarters, and during the first week of October I obtained specimens of it again from the Bosco di Fienzza, whereas my collector entirely failed to meet with the species during that month in the Madonian mountains (the *Montes Marones* of Pliny) or the Nebrodian range (the *Montes Nebrodes* of Strabo).

To sum up, *Acredula sicula* appears to be an insular form, closely allied to *A. caucasica* Lorenz, occurring, so far as is at present known, only in the island of Sicily, and inhabiting the wooded inland districts of that island, where it breeds in the higher mountain forests.

So far as I am aware, no other form of *Acredula* occurs in Sicily, although Doderlein has stated that *A. irbii* was to be found there as a winter migrant; indeed he mentions having sent a Sicilian specimen of that species to the British Museum ('Avifauna del Mod. e della Sic.' pp. 138 & 341). It is quite possible that *A. irbii* may also occur in the island, but I have no knowledge of its doing so, and the Sicilian collection of the Palermo University Museum only possesses a solitary example of *Acredula*, the label attached to which bears the following inscription: "*Parus caudatus*, Linn., Marzo 1888: Bosco della Fienzza."

After some hesitation, I have decided not to suppress the names of the several districts in Sicily where I have found *A. sicula*, as I think that it would hardly repay any trading naturalist to attempt to lay in a "stock" of specimens of the species, and the difficulties which beset the ordinary traveller in the interior of the island are of themselves sufficient to deter any but the keenest collector from penetrating those mountainous regions!

I append the following full description of the types of this *Acredula* in my collection :—

ACREDULA SICULA. (Plate II.)

Adult male (from Bosco di Fienzza, Sicily; February 3rd, 1901). Forehead and crown light brown, with an ill-defined median whitish stripe; lores and space immediately surrounding the eyes whitish; a collar round the nape dull black; entire back and rump grey; upper tail-coverts blackish; wings blackish brown, the secondaries edged with white; tail with its four central feathers black, the next adjoining pair black, very slightly fringed with white on the outer web, the next pair rather more fringed with white, and the two exterior pairs distinctly tipped with white and having the entire outer web white; chin white; throat and upper breast white, with a slight admixture of darker feathers; lower breast and abdomen whitish, tinged with pale brown, and becoming vinous rose on the flanks and crissum; under tail-coverts vinous rose, tipped with whitish. Irides dark hazel, eyelids yellowish; bill and feet blackish brown. Total length 5 inches, wing 2·25, culmen ·20, tarsus ·60.

Adult female (from Bosco di Fienzza, Sicily; February 3rd, 1901). Plumage, colouring, and soft parts almost identical with those of the male. Total length 5 inches, wing 2·20, culmen ·20, tarsus ·60.

In a recent number of the 'Bulletin' of the British Ornithologists' Club (see vol. x. p. xvii) a new species of Chat was described by me under the name of *Saxicola cummingi*. The specimen from which the description was taken is in the British Museum collection, and appears to have been wrongly identified as *S. mæsta* Licht.

This Chat was procured by Mr. W. D. Cumming at Fao, in the Persian Gulf, and as it is apparently a rare species—the present example being, so far as I am aware, the only one known to exist in any collection—I have thought it well to have the accompanying figure of it made for 'The Ibis.'

The following is copied from the description given of the bird in the 'Bulletin' of the B.O.C.:—

"*SAXICOLA CUMMINGI*. (Plate III.)

"*Adult*. Closely allied to *S. xanthoprymna* H. & E., but distinguished by having the basal part of the tail-feathers rusty red like the upper tail-coverts, instead of white. From *S. mæsta* to be at once distinguished by having the top of the head and nape brownish grey like the back, the rump and upper tail-coverts rusty, and the rufous on the outer tail-feathers extending to within 0·7 inch of the extremity. Total length 6·5 inches, culmen 0·78, wing 3·7, tail 2·45, tarsus 0·95.

"*Hab.* Fao, Persian Gulf (*W. D. Cumming*)."

IV.—*Results of an Ornithological Journey through Colombia and Ecuador.*—Part IV. By WALTER GOODFELLOW, F.Z.S.

[Continued from 'The Ibis,' 1901, p. 715.]

Family DENDROCOLAPTIDÆ.

250. *UPUCERTHIA EXCELSIOR* (Scl.).

Four ♂s, 2 ♀s, from Pichincha, Pedregal, and Corazón. Met with singly in lonely situations, at altitudes of about 13,000 feet, on stony or lava-covered ground. The stomachs contained small beetles and other insects.

251. *LEPTASTHENURA ANDICOLA* (Scl.).

Three ♂s, 2 ♀s, from the Volcan de Pichincha, 14,500 feet, and the Mojanda Pass, North Ecuador, at a similar altitude. These birds fly close along the top of the "páramo" grass, settling on any plant that will bear their weight. At night they retire under the tufts of grass or into the crevices of rocks to sleep. The stomachs contained moths, beetles, and seeds.

252. *SYNALLAXIS FRONTALIS ELEGANTIOR*.

Synallaxis elegantior Scl. Cat. Am. B. p. 151.

Synallaxis frontalis Scl. Cat. Birds, xv. p. 39.

Two ♂s, 1 ♀. Gualea, West Ecuador.

253. *SYNALLAXIS PUDICA* Scl.

One male, from San Nicolas, West Ecuador, shot on an ants' nest.

254. *SYNALLAXIS GULARIS* Lafr.

Three ♂s, 2 ♀s, from the western side of Corazón, at about 10,000 feet.

255. *SYNALLAXIS FULIGINOSA* Lafr.

Three ♂s, 3 ♀s. Santo Domingo and Gualea. These birds were numerous at the former place, in the clearing among the rotten tree-trunks. By knocking an ants' nest to pieces, we managed to attract many of them and other kindred species. The colour seems to vary with age.

256. *SYNALLAXIS ERYTHROPS* Scl.

Four ♂s, 4 ♀s, from Intag, Gualca, and San Nicolas, West Ecuador.

257. *SYNALLAXIS FLAMMULATA* Jard.

One male and one female from Pichincha, 11,500 feet. The female appears to have a much shorter wing than the male, and the bright yellow spot on the base of the lower mandible of a much paler shade.

258. *THRIPOPHAGA GUTTULIGERA* Scl.

Two ♂s from Papallacta, Eastern Andes, 11,500 feet.

259. *PSEUDOCOLAPTES BOISSONEAUTI* (Lafr.).

Two ♂s, 4 ♀s, 2 ♂ jr. Pichincha, Corazón, and Valle de Viciosa. Common on both sides of Ecuador at altitudes of between 12,000 and 14,500 feet. They frequent both stony ground and the "páramo" grass region. At night they retire to holes in the banks or "quebradas," or under tufts of grass. They have a particularly mournful note, which they utter incessantly in the early morning, even before the break of day, and again in the evening until it is quite dark: while this cry, heard all over the high regions of Ecuador, became associated in our minds with frost and snow. They were very tame, and would allow us to approach within a few yards of them. I think that this must be the bird which Sir Martin Conway mentions in his book on the Bolivian

Andes under the name of the "*Sintenella*," the cry of which, he says, "was one of the earliest sounds heralding the dawn."

260. *THRIPADECTES FLAMMULATUS* (Eyt.).

One male from Gualea, West Ecuador. Apparently rare in that locality. It was shot in the very early morning feeding on the berries of a low bush.

261. *ANCISTROPS STRIGILATUS* (Spix).

Ancistrops lineaticeps Scl. & Salv. Nomencl. p. 65.

A male from the Coca, Rio Napo, where the bird frequents the clearings.

262. *AUTOMOLUS PALLIDIGULARIS* Lawr.

A male specimen from the Upper Napo appears to belong to this species.

263. *AUTOMOLUS SUBULATUS* (Spix).

One male and two females from the Suno and Coca rivers, Rio Napo. Lower mandible yellow; upper mandible brown.

264. *PHILYDOR COLUMBIANUS* Cab.

One male from Intag, Western Ecuador.

265. *ANABAZENOPS TEMPORALIS* Scl.

Three males from Intag, West Ecuador.

266. *ANABAZENOPS SUBALARIS* Scl.

A single male shot on the west side of Pichincha at about 9000 feet altitude.

267. *XENOPS RUTILUS* (Licht.).

A male from Baeza, East Ecuador.

268. *XENOPS GENIBARBIS* Ill.

One male and two females, from the forests of Santo Domingo.

269. *MARGARORNIS BRUNNESCENS* Scl.

A male from Baeza, altitude 5500 feet.

270. *MARGARORNIS STELLATA* Scl. & Salv.

A male from near Intag, West Ecuador.

271. *MARGARORNIS PERLATA* (Less.).

Margarornis perlata Scl. Cat. Birds, xv. p. 121.

Three males and three females from Pichincha, West Ecuador, and a similar series from Papallacta, East Ecuador, at altitudes above 11,000 feet, where we found them frequenting the scanty bushes growing in the more sheltered "quebradas" or volcanic rents on the bleak mountain-sides. The bushes are thickly covered with moss, among which these birds hunt for their insect-prey. Those from the Eastern Andes appear to have slightly longer tails.

272. *MARGARORNIS GUTTATA* Lawr.

Margarornis guttata Scl. Cat. Birds, xv. p. 123.

One male from Pichincha, and a male and female from Papallacta. The two last-named specimens vary somewhat from the western by being more reddish brown about the lower part of the breast and vent; the throat is lighter, of a dirty white, and the whole of the back more speckled. Like *M. perlata*, this bird frequents the weather-beaten moss-covered trees in the "quebradas."

273. *GLYPHORHYNCHUS CUNEATUS* (Licht.).

A male and a female from the forests of Santo Domingo.

274. *DENDROCINCLA TYRANNINA* Lafr.

One male from Nanegal, West Ecuador.

275. *DENDROCINCLA OLIVACEA* Lawr.

Dendrocincla olivacea Scl. Cat. B. xv. p. 166.

A male and a female from Santo Domingo.

276. *DENDROCINCLA* sp. *inc.*

A female from the Coca, Upper Napo. This species is closely allied to *D. longicauda*, but is much smaller.

277. *DENDROCOLAPTES RADIOLATUS* Scl. & Salv.

A male from Archidona, East Ecuador.

278. *DENDROCOLAPTES VALIDUS* (Tsch.).

One male from Baeza, East Ecuador. Maxilla horn-coloured; mandible yellowish horn-coloured.

279. *XIPHOCOLAPTES PROMEROPHIRHYNCHUS* (Less.).

A male from the forests of Baeza, East Ecuador. Shot on an ants' nest in a tree. This bird has a curiously loud call-note, which can be heard a long distance off.

280. *DENDRORNIS ERYTHROPYGIA* Scl.

Two males from Baeza, East Ecuador.

281. *DENDRORNIS PUNCTIGULA* Ridgw.

Dendrornis punctigula Ridgw. Pr. U.S. N. Mus. xi. p. 544.

Three ♂s, 3 ♀s, from Nanegal, Intag, and Gualea, West Ecuador.

282. *DENDRORNIS OCELLATA* (Spix).

A male from Archidona, East Ecuador. Bill whitish horn-coloured at the tip and greyish horn-coloured at the base. Shot on a banana-tree.

283. *PICOLAPTES WARCEVIEZI* Cab. et Hein.

Picolaptes warceviezi Scl. Cat. B. xv. p. 149.

Five ♂s, 3 ♀s from Gualea, Intag, and Santo Domingo, Western Ecuador, and Baeza, Eastern Ecuador. In every locality where we shot these birds we found them on the trunks of fallen forest-trees. Doubtless they range to a lower altitude on the Western than on the Eastern Andes.

284. *XIPHORHYNCHUS TROCHILIROSTRIS* (Licht.).

Two males from Santo Domingo, Western Ecuador. Bill reddish chrome-coloured.

285. *XIPHORHYNCHUS PUCHERANI* Lafr.

One male from Guanacillo, Western Ecuador, shot on the trunk of a banana-tree. Its stomach contained small weevils, which are common in the soft rotting parts of these trees.

Family FORMICARIIDÆ.

286. *THAMNOPHILUS MELANURUS* Gould.

One female from Archidona, Eastern Ecuador.

287. *THAMNOPHILUS LEUCONOTUS* Spix.

Two males from the headwaters of the Rio Napo. One

of the skins has the feathers on the middle of the abdomen tipped with white. These birds frequent the bushes around the Indians' huts.

288. *THAMNOPHILUS IMMACULATUS* Lafr.

One male and two females from Santo Domingo and San Nicolas. The bare skin around the eyes is light blue in life, more intense in the male than in the female.

289. *THAMNOPHILUS ÆTHIOPS* Scl.

A male from the Coca, Upper Rio Napo. All the members of this genus appear to frequent the low thick bushes in the forest-clearings, especially where the ground has been newly cleared.

290. *DYSITHAMNUS SEMICINEREUS* Scl.

A male and a female from the lower parts of the western side of Pichincha.

291. *DYSITHAMNUS LEUCOSTICTUS* Scl.

A single male from Baeza, Eastern Ecuador (5500 feet).

292. *DYSITHAMNUS SCHISTACEUS* d'Orb.

A male only from Archidona, Eastern Ecuador.

293. *DYSITHAMNUS UNICOLOR* Scl.

A male and a female from Gualea and San Nicolas respectively.

294. *THAMNOMANES GLAUCUS* Cab.

A male and a female from the Coca, Rio Napo. This bird frequents the clearings.

295. *MYRMOTHERULA SURINAMENSIS* (Gm.).

One male and two females from San Nicolas and Gualea, West Ecuador.

296. *MYRMOTHERULA HAUXWELLI* Scl.

A female from the Coca, Rio Napo.

297. *MYRMOTHERULA MELÆNA* Scl.

Two males from Santo Domingo. One is apparently a young bird and has the abdomen slate-coloured.

298. *MYRMOTHERULA MENETRIESI* d'Orb.

Two males from Gualea, Western Ecuador, one being immature.

299. *FORMICIVORA CAUDATA* Scl.

Two males from Milligalli (6000 feet) and a female from Gualea.

300. *FORMICIVORA CONSOBRINA* Scl.

A male from San Nicolas and a female from Gualea.

301. *TERENURA HUMERALIS* Scl. et Salv.

Terenura humeralis Scl. et Salvin, P. Z. S. 1880, p. 59.

A male from Papallacta, Eastern Ecuador. It is apparently slightly immature, as the head is not quite so dark as the type specimen in the British Museum.

302. *MYRMECIZA EXSUL* Scl.

Three males from Santo Domingo and Guanacillo. These birds frequent the thick undergrowth in the forests, especially where the ground is swampy. The bare skin behind the eyes is light cobalt-blue, while a much darker shade of the same colour appears round the nostrils and at the base of the bill.

303. *HYPOCNEMIS MYIOTHERINA* (Spix).

A male from Baeza, Eastern Ecuador (5500 feet).

304. *PITHYS LEUCASPIS* Scl.

A male from Santo Domingo. Perhaps these birds are not rare there, but they are difficult to find, as they hop about on the ground under the thick undergrowth of the forests. Iris dark red.

305. *PHLOGOPSIS TRIVITTATA* Scl.

One male only, from near the mouth of the Coca, Rio Napo. Shot among the undergrowth on the edge of the forest, where these Ant-Thrushes hop about with a jerky movement of the tail. Iris dark brown; bare skin at the back of the eyes bright red. Bill black, but brownish towards the tip. In life the neck of this bird is singularly thin, which gives it a curious appearance. When it is skinned it

is only with difficulty that the skull will pass through the neck. The stomach of my specimen contained ants and small beetles.

306. *CHAMÆZA NOBILIS* Gould.

A male from the Coca, shot on the ground among the undergrowth of the forest. Iris bright red.

307. *GRALLARIA SQUAMIGERA* Prévost.

Two males, one of them immature, from the slopes of Pichincha above Quito. The young male has the head and back black and the tips of the feathers edged with light reddish brown. The breast is speckled with black and brown, which is much darker near the throat.

308. *GRALLARIA NUCHALIS* (Scl.).

A male from the western side of Pichincha, shot at an altitude of about 9000 feet.

309. *GRALLARIA MONTICOLA* Lafr.

One adult male and two young, shot under the hedgerows on the outskirts of Quito. The young have the head and back speckled with black and brown; their breasts are darker than in the adult bird and are marked down the centre with black; gape yellowish red.

310. *GRALLARIA RUFICAPILLA* Lafr.

Two males from Intag and Mindo, West Ecuador. Iris bright red. Like all other members of the genus, these birds keep out of sight as much as possible under the bushes and thick undergrowth. In the early mornings and evenings they may be met with in the more open parts.

311. *GRALLARIA HYPOLEUCA* Scl.

Four males, 1 female, from Pichincha and Papallacta, Western and Eastern Ecuador, obtained at altitudes of between 11,000 and 12,500 feet. This species we found frequenting the sides of the narrow watercourses on the Eastern Andes. Iris reddish brown.

312. *GRALLARIA RUFULA* Lafr.

Three males and 3 females from Pichincha and Papallacta (from 11,000 to 12,000 feet). A female from the former

mountain is much lighter on the vent than those from Papallacta. At the latter locality we found this bird frequenting the open meadows in the early morning.

Family PTEROPTOCHIDÆ.

313. SCYTALOPUS MAGELLANICUS (Lath.).

Four males and 1 female from Pichincha and Papallacta. The single male from the latter locality has the breast of a comparatively light slate-colour. The female is more rusty-looking on the wings than the males. We found these birds difficult to shoot, for they hop along the ground so quickly that they are lost to sight among the bushes at once.

314. SCYTALOPUS SENILIS Lafr.

One example from Pichincha, Western Andes, 13,000 feet, and one from Papallacta, Eastern Andes, 11,500 feet. Both are marked "males," but the Pichincha bird is decidedly the lightest on the throat and abdomen and is white above the nostrils. Both are brownish about the thighs and vent.

315. ACROPTERNIS ORTHONYX (Lafr.).

We shot two males and two females of this bird, one pair near the little village of Lloa and the other pair by the waterfall a thousand feet above Quito, both localities being on the eastern side of Pichincha. This is where Festa obtained the examples which Count Salvadori has described as *A. infuscatus* *. I have compared our skins with those in the British Museum, and they appear to belong to typical *A. orthonyx*. The females are more rusty-looking on the breast and under parts.

[To be continued.]

V.—*Forty-four Days' Nesting in Andalusia.*

By HEATLEY NOBLE, F.Z.S.

THE ornithology of the south of Spain has been so well worked out by the late Lord Lilford, Colonel Irby, Mr. Howard Saunders, Mr. Dresser, and others that it seems almost an

* See 'Ibis,' 1900, p. 394.

impertinence for one who has done so little to venture to take up his pen; yet, on the principle that "every little helps," I send to 'The Ibis' a few notes on the district extending from a few miles south of Seville to the mouth of the Guadalquivir near San Lucar.

To my mind, the great charm of a birds'-nesting trip to the south of Spain consists in the fact that many species which may be common in one spot are not found ten or fifteen miles further on; others taking their place, even when, to the human eye, the country seems to be equally suited to their requirements. Practically the breeding-season lasts from January to July, beginning with the Bearded Vulture in the first month, and ending with the Flamingo and Black-bellied Sand-Grouse; but, owing to the short time at my disposal, I missed many of the earlier species and a few of the later breeders. The actual days in the field numbered forty-four, and two others were wasted: one in seeing a bull-fight, the other on account of an election, when my men fell victims to the bottle! The drawbacks to Andalusia seem to me to be much exaggerated: the climate is hot, but otherwise perfect, and although snakes, scorpions, leeches, and lizards abound, the visitor soon gets used to them; mosquitoes, however, are a trouble, especially when he is blowing eggs or skinning birds late at night. The peasants are civil, and if they would not shoot every game-bird and duck from its nest, and eat all the eggs on which they can lay their hands, I should like them very well. It was heart-breaking to find dozens of egg-shells of the Slender-billed Gull lying outside a horse-keeper's house, the contents having been eaten!

The first nest was taken on April 14th and the last on May 29th; but, although the days were few in number, our hours of work were long—often from 5.30 A.M. till dark; then blowing eggs continued till after 12 P.M. In all, eggs of ninety-four species were taken or seen, and I believe that one is recorded from Spain for the first time, namely the Pintail (*Dafila acuta*). I was fortunate in obtaining permission to visit several Cotos, and my thanks are especially due to

Mr. Buck for his kindness in allowing me to stay at the celebrated Coto Doñana.

SAXICOLA ALBICOLLIS.

Only one pair seen; the nest, in a hole in a bank, was composed of roots and lined with fine grass; it contained five fresh eggs on May 10th.

PRATINCOLA RUBICOLA.

An early breeder, full-fledged young were found on April 14th; incubated and fresh eggs up to April 18th. Stonechats were very abundant at first, but towards the end of May most of them had disappeared.

DAULIAS LUSCINIA.

Very common; the first nest was found on May 12th, and young were seen on the wing on May 28th.

SYLVIA MELANOCEPHALA.

Common; fresh eggs from April 14th onwards. I never saw more than four in a nest, and these were subject to great variation.

SYLVIA ORPHEA.

Common; fresh eggs from May 10th. The nests were placed from 10 to 15 feet from the ground, in olive and other trees, generally at the extreme end of a bough; they were slight in construction, and were made of coarse grasses lined with finer materials. Two nests contained three incubated eggs each, one had seven that were fresh.

MELIZOPHILUS UNDATUS.

The Dartford Warbler is fairly numerous in suitable localities, and is an early breeder. On April 14th we found four eggs slightly incubated; on April 15th, four and three hatching; on May 1st, four fresh (possibly the first nest had been destroyed). I do not think that this species breeds twice, as we never saw eggs again. Three out of these four nests contained *red-spotted* eggs; the male was incubating in two cases and the female in one. The nests were well made, rather deep, and in every case placed in *dead* gorse.

HYPOLAIS POLYGLOTTA.

Common near the river. On May 27th many nests were taken with from three to five eggs, nearly all fresh ; they were mostly in low bushes, well concealed, and made of grass, lined with hair or fine grass.

HYPOLAIS OPACA.

More abundant than the former species ; several nests were found in tamarisk-bushes near the river. These nests, often much exposed, were deep, cup-shaped, and made of grass, well lined with cotton-down, thistle-down, and in one case with sheep's wool ; the lowest was about 4 feet from the ground, the highest about 12 feet. No nest contained more than four eggs, and some of these were slightly incubated on May 28th.

ACROCEPHALUS TURDOIDES.

Very numerous on the river-banks wherever reeds were found ; their harsh song might be heard all through the day and most of the night. On May 7th they were just beginning to lay, and we found nests with from one to three eggs ; on May 24th we saw others containing from four to six eggs, mostly incubated. The nests are counterparts of those of our Reed-Warbler, though of course on a larger scale ; very substantial, deep, and easily found.

ACROCEPHALUS STREPERUS.

Not very common. Nests found from May 7th to May 28th.

CETTIA CETTI.

The first nests found, on May 6th, contained four eggs each, one clutch too much incubated for preservation ; others with four and five eggs on May 11th and after. They were all in tamarisk-bushes near the river, compactly put together, deep, made of grass, and lined with horsehair. Unlike those mentioned by Col. Irby, these nests were placed almost in the open and were quite easily seen. The bird seems to be very local, but numerous where it is found.

CISTICOLA CURSITANS.

Found commonly in all suitable localities. On April 14th we took four beautiful little nests and found another with the eggs just hatching. These were all in spear-rushes about 2 feet from the ground, and were formed of several stems fastened together with spiders' webs and interwoven with fine grass; they were 3 or 4 inches deep, drawn together slightly at the top and rounded off. They were lined with dandelion- and other flower-down, and were exceedingly difficult to find. Two broods may possibly be reared in the season, as nests are often found when cutting barley at the end of May, and I saw one on May 5th with nearly fresh eggs. These are subject to the most extraordinary variation in colour:—

1. Four fresh eggs, light blue, fine red lines and dots all over them.
2. Six fresh eggs; red spots on white ground.
3. Six fresh eggs; all white.
4. Six much incubated eggs; all blue.
5. Four eggs on the point of hatching; lighter blue.
6. Four fresh eggs; white, fine red lines. April 16th.
7. Five slightly incubated eggs; very pale blue. May 5th.

} April 14th.

PARUS MAJOR.

Common; nests found with fresh eggs, April 17th to 29th.

MOTACILLA FLAVA.

Common, especially on the marismas. Fresh eggs were found on May 5th and young birds on May 7th, so laying is rather irregular. All the nests that I saw contained five or six eggs; they were built in scrub, near, but not quite on, the ground.

LANIUS MERIDIONALIS.

Very local; an early breeder. On April 15th I found a nest with young just ready to fly, and was told of another from which full-fledged young had been taken three weeks before. On the same day we saw some with three fresh

eggs and other birds building, probably, second nests ; these were never more than 10 feet from the ground, in olive and other thick trees, and were of large size and made of roots and sticks lined with grass. The boys catch these Shrikes in winter in "clap-nets" and sell them as cage-birds, consequently they have been much reduced in numbers.

LANIUS POMERANUS.

Abundant. The first nests with eggs were found on May 2nd ; later on numbers were seen. They are usually placed in a fork or on a bough of some small tree ; I did not find one in a bush. Six is the usual number of eggs, which vary considerably in pattern and colour. In one exceptionally early nest on May 21st young birds were fully fledged and flew out as I touched them.

HIRUNDO RUSTICA.

Very common ; nesting in many of the farm-buildings.

CHELIDON URBICA.

Local ; many were breeding in Seville and on a station just outside.

CARDUELIS ELEGANS.

One of the commonest birds ; it must rear at least two, if not three, broods in the season. We saw fresh eggs on April 14th, and continually till May 27th, when two nests were found, both with five fresh eggs.

SERINUS HORTULANUS.

Local ; one nest with nearly fresh eggs found on May 2nd. It was 15 feet from the ground in the slender twigs of an olive-tree. One of us had to stand on the back of a horse to reach it, and unfortunately smashed the eggs !

LIGURINUS CHLORIS.

Common in gardens, &c. ; fresh eggs April 14th, 15th, and 17th.

PASSER DOMESTICUS.

Common in villages. One nest in a tree contained the large number of seven eggs.

EMBERIZA MILIARIA.

Numerous in cultivated districts. Fresh eggs April 16th; others on May 6th were slightly incubated.

GALERITA CRISTATA.

Exceedingly common on the corn-lands, and found breeding right up to the edges of the so-called "mountains." Many nests were seen, from April 14th to the last day of our stay, with fresh eggs. The Crested Lark was often sitting on three eggs, but we took some nests with four and a few with five.

MELANOCORYPHA CALANDRA.

Common; more so in the large grass-fields near the river than on the cultivated land. We found a few nests from May 5th onwards; one on May 20th contained four young and two infertile eggs. This bird is easily distinguished on the wing from the other Larks seen in the same locality, not only by its size, but by the white edgings of the secondaries, which are very conspicuous in flight.

STURNUS UNICOLOR.

Local, but very numerous in certain districts. From a large pigeon-house I took sixty eggs, and could have collected as many dozens had I wished, for the birds were there in swarms, and had driven the pigeons away to such an extent that the owner meditated their destruction. On April 26th most of the nests had sets of six or seven eggs very slightly incubated. The note seemed to me to be much softer than that of our bird, but in habits and mode of nesting I could see no difference.

Whilst on the subject of Starlings, I may mention that last winter several thousand dozens of *S. vulgaris* were netted on the Island of Tarfia, and the skins sent to Paris, where they fetched $2\frac{1}{2}d.$ each!

CYANOPICA COOKEI.

Common in the pine-woods. The first nest was found on April 24th, and contained six fresh eggs; but general laying

did not begin till ten days later. The lowest nest was not more than five feet from the ground, and the highest about thirty. Four to seven eggs is the usual clutch; eight were found once.

PICA RUSTICA.

Locally common. In one district it simply swarmed, breeding in low cork-trees and in bramble-bushes only a few feet high; one nest containing eggs was no higher than my knee. I noticed that many of those in the thick bramble-bushes were not roofed. On April 24th most nests contained full complements of eggs, some of them having as many as eight.

CORVUS MONEDULA.

Common, but local. Many nests in holes in the old cork-trees, with fresh eggs on April 26th.

CORVUS CORAX.

Common, nesting mostly in the pine-woods. It seems curious that a bird which breeds so early in this country should be so much later in the South*. The first full clutch of fresh eggs taken was on May 1st, and consisted of six; subsequently we obtained several nests with from five to seven, and on May 21st there were young just hatched. Ravens' nests can easily be distinguished from below from Kites', Buzzards', &c., by their much rounder and neater appearance. They are also deeper, and smaller sticks are used in the construction.

CYPSELUS APUS.

Very common in some of the villages and still more so in Seville, where it was nesting by scores under the eaves of the houses on May 30th.

CAPRIMULGUS RUFICOLLIS.

Common. I saw many birds, but did not find eggs

* Mr. Saunders tells me that he found Ravens feeding large young on March 18th, 1868, at Baza, in the Province of Granada; so it is possible that those which I found were second nests; but, if this is the case, it seems curious that I never met with a young fledged Raven of the year.

myself. A clutch of two fresh eggs was brought to me on May 11th, and another on May 16th.

GECCINUS SHARPII.

Common locally, and a very early breeder. I found young more than half-grown on April 27th. One nest was in a hole in a large cork-tree almost on the ground. A Spanish Imperial Eagle had a nest in the next tree. On May 1st and May 16th two full sets of eggs were taken, nearly fresh! At the base of the beak of the young I noticed the peculiar knob mentioned by Mr. Gurney ('Zoologist,' 1901, p. 128) as occurring in *G. viridis*.

CORACIAS GARRULUS.

Common, but the nests are hard to find. Rollers are rather late breeders, and it was not till May 26th that we took a set of five fresh eggs from a hole in a tree. Another nest in a Moorish tower, on May 29th, also contained five eggs slightly incubated. Little or no actual nest is, however, made, as a rule; but I watched one pair of birds pulling up grass and carrying it away to a distance, presumably for building purposes, though I failed to discover the breeding-place.

MEROPS APIASTER.

In spite of snaring, shooting, and netting, Bee-eaters are still quite common, though the natives say that they are not nearly so numerous as formerly. They nest in the banks of the rivers and on roadsides, and even excavate their holes in the flat ground. These slant downwards, some being nearly three yards long; while they are generally straight, though one was noticed to have a turn nearly at right angles. The holes seem unnecessarily large for the size of the bird, and a cavity is formed where the eggs are deposited. Hoopoes occasionally make use of old nesting-holes of the Bee-eater. It was not till May 24th that laying was in full progress: six eggs seem to be the usual complement.

COCCYSTES GLANDARIUS.

Extremely local. At the Coto Doñana I never saw the Great Spotted Cuckoo nor did I find its egg, although Magpies' nests were numerous; yet it was abundant sixteen

miles away. On April 24th and 25th we took several eggs. The very first Magpie's nest which I saw contained seven Cuckoo's eggs and three of the rightful owner: they were in all stages of incubation, from fresh to nearly hatching. Other nests held three Cuckoo's and five Magpie's eggs, two and five, four and three, one and one, &c. When the nests were in the open cork-trees they were nearly sure to contain Cuckoos' eggs; when they were placed in thick bushes, very rarely. The natives say that the reason of this is that the Cuckoo prefers an open tree, in order that she may make off on the return of the owner; and certainly, whenever we saw a fight (which was pretty often) the Magpie had much the best of it. I expect that the true explanation is that the nests in trees are much more accessible. The only egg which we took from a nest other than that of a Magpie was in that of a Raven built at the top of a very large pine-tree; the nest contained six Raven's eggs and one of the Cuckoo on May 1st, all quite fresh. This was the only egg of the Cuckoo found in that particular district; and as five boys living close by were all on the look-out, it is unlikely that there were many others. Curiously enough, Messrs. Selous and Musters found young Ravens and a Cuckoo in the same nest in 1900.

STRIX FLAMMEA.

Fairly common; nesting in holes in trees, and once found in a Moorish tower. April 26th, six fresh eggs in an old cork-tree; May 7th, four young just hatched.

SCOPS GIU.

Not conspicuous; few seen, but more heard. The Scops is much more nocturnal than the Little Owl, and I never saw one flying in daylight unless disturbed; moreover, it breeds later. It was not till May 20th that an egg was found, on which the female was sitting; on May 25th and May 27th we obtained two and three which were fresh; in each case the female was on them. My man caught another incubating a single egg, and placed her in a cage, where she laid an egg each day until seven had been deposited, when she was liberated.

ATHENE NOCTUA.

Very common. Eggs were found from April 24th, the bird often sitting on three only, while the largest number in one nest was five. They are laid at intervals of one or two days. One nest was *on the ground*, inside a large cork-tree. In nearly every case the female was incubating. Young birds were found on May 14th.

CIRCUS ÆRUGINOSUS.

Common, especially by the river, where they nest in the reeds. On May 6th we found seven nests in the almost impenetrable reeds on Tarfia: in some the eggs were fresh, in others incubation was far advanced. One contained five, one four, one three, the others only two; but as thirty dozen eggs of Purple Herons and "Kites" were taken by one set of fishermen from this island last year, it is possible that the clutches were incomplete though incubated. The nests were made of rushes, and were situated lower in the reeds than those of the Heron, while they were very substantial: one nearly carried my weight. As a rule, they were not in quite such thick places, and *one* was on the ground in a nearly clear spot. The birds sat close; we never flushed a male from the nest. Four nearly fresh eggs were found on May 15th in the marisma on a little scrub bush. One male had his crop full of remains of eggs.

CIRCUS CINERACEUS.

Not so common as the last species and more local. We only found it numerous in one large enclosure of high grass and rough weeds, where, on May 7th, we took five nests, containing four or five eggs each, which were slightly incubated or fresh. They were all placed *on the ground*, and were well made, one having many feathers in it. In each case the female was on the nest, and from one which was killed I took the leg of a Quail. This Harrier sits very closely: I marked one hen bird on her nest, and four men walked in line ten yards apart till I was convinced we had passed her: we turned round and walked past once more; still she declined to move. I then fired two shots without result; but it was

not until one of the men had almost trodden upon her that she rose from four fresh eggs. One clutch was slightly marked with red ; all the others were white.

BUTEO VULGARIS.

Common in the pine-woods. Incubated eggs were found on April 14th, and young some days old on April 16th. The clutch generally consists of two eggs, and we only once saw three in Spain.

AQUILA PENNATA.

The Booted Eagle is not rare. Nests were found in pine- and cork-trees. In the first, on April 25th, the eggs were so well marked that I had to shoot the female for identification, and she is now in the British Museum. The nest is large, sometimes placed on a bough, but more often in the centre of the tree towards the top. The female sits very closely. There were two eggs in each nest, and even those found on May 11th were fresh.

AQUILA ADALBERTI.

The Spanish Imperial Eagle is now rare. A nest shown me by a keeper on April 27th contained two white but very dirty eggs, on the point of hatching. This nest was at the top of a large cork-tree ; the female left it when we were a long way off and did not return. The next day another nest was seen, also high up in a cork-tree, with two large young and a rotten egg. Two half-eaten rats lay at the foot of the tree.

CIRCAËTUS GALLICUS.

A few observed. On April 27th a nest was found with the usual single egg, very much incubated, and on the 28th another with one that was quite fresh ; both of these were in cork-trees, one out on a bough, the other near the top. In the very next tree, not twenty yards away, was a Booted Eagle's nest, in the next tree but one a Red Kite had her young, the Imperial Eagle's nest with nestlings was not a hundred yards off, and a Green Woodpecker had young in the same tree !

MILVUS ICTINUS.

The Red Kite is much more local than the Black Kite and not nearly so plentiful. Like most of the resident birds, it breeds early. From April the 27th to the 29th we found several nests, but they all contained young or eggs on the point of hatching; one nest had three eggs without spots. Most of the Red Kite's nests had three eggs (about eleven nests were found); whereas I saw dozens of those of the Black Kite, but only found three eggs in a few cases, even when incubation was far advanced.

MILVUS MIGRANS.

The Black Kite is very common, sometimes breeding in small colonies, and in one of the pine-woods I counted twenty-three birds in the air together. The first eggs were seen on April 16th, but laying did not fully commence till quite ten days later. I could see no difference between the nests of this and of the last species; both were adorned with "lesser linen" and once with cigarette-paper and some old printed matter. Personally I found no lottery-tickets, but I know of one having been found! The eggs are generally smaller and rounder than those of the Red Kite.

FALCO TINNUNCULUS.

Abundant, laying in old nests of the Kite, Raven, and Buzzard, also in holes of trees, and often in old nests of Magpies; fresh eggs were found from April 16th.

FALCO CENCHRIS.

The Lesser Kestrel is not so common as the last-named, and breeds much later. The first eggs taken, an incomplete clutch of three, were in a hole in a tree on May 10th. On May 27th I took clutches of four and five from similar holes, very slightly incubated and fresh. One set of eggs, on which I caught the old bird, was not five feet from the ground. On May 29th fresh clutches of four and five respectively were taken from an old Moorish tower, and, judging from the number of birds flying round, many of them had not even then begun to lay.

ARDEA PURPUREA.

Purple Herons were very numerous; their large nests are

built of dead rushes, from four to ten feet from the ground, in swamps and reed-beds. Some nests contained five eggs, but three or four were more usual. On April 27th we found them fresh and incubated, and young on May 14th. Three nests were on low tamarisk-bushes in the middle of a large colony of the smaller species of Herons.

ARDEA GARZETTA.

The Little Egret is common locally. On bushes in Laguna Taraja, in the carefully preserved Coto Doñana, I found this bird breeding in some numbers. The nests were slight platforms of sticks placed on tamarisks growing in water three or four feet deep, and many had full sets of four and five eggs on April 27th.

ARDEA BUBULCUS.

The Buff-backed Heron is more numerous than the last-named, and breeds in the same place and at the same time: full sets of eggs were found on April 27th. It is also much tamer and will sit quietly whilst you wait within a few yards, though this is not necessary to identify the eggs, which are always much lighter in colour than those of the Little Egret or the Night-Heron.

NYCTICORAX GRISEUS.

Local, and breeds later than the above-mentioned species. On our first visit to the Heron-colony (April 27th) the Night-Herons had hardly begun to lay, and none were sitting. On May 14th we watched several to their nests, which contained from three to four (we never saw five) slightly incubated eggs. The nests were placed rather high up in the bushes, and when disturbed the birds did not return readily. These eggs are valueless if not identified, for they cannot with certainty be distinguished from those of the Little Egret, though they are generally a little larger.

ARDEA RALLOIDES.

The Squacco is the rarest of the Spanish Herons; it was breeding in the aforesaid colony, but rather later. In April we did not see a bird, but on May 14th we found several nests with from three to six eggs, all fresh. The nests are better

made than those of the other species, and often had a few rushes used in their construction; the eggs are much smaller and cannot be mistaken.

ARDETTA MINUTA.

The Little Bittern is very common in certain districts. We found fresh eggs on May 7th; on the 18th five nests, containing five, five, five, four, and three eggs respectively, all fresh. Four of these nests were on boughs, under the sheltering heads of young willows pollarded last year but with a fresh growth of a foot or more; they were surrounded by high rushes growing in water four feet deep, and were flat, rather like those of the Wood-Pigeon, with some dead rushes in them. It was not difficult to see them, as the white eggs showed up plainly; but the wading to them was a hard task, owing to the matted rushes in the water. On May 20th and May 24th many nests were found in reed-beds on another part of the river; upwards of twenty in course of building, or containing from one to six eggs, being seen in a single morning; these were in high reeds, which were very difficult to get through, and were composed of dead rushes placed a few feet above the water. Two clutches were much incubated.

BOTAURUS STELLARIS.

We never saw or heard this bird, though I am told that it is common in certain seasons; two fresh eggs were taken on the wet marisma Las Nuevas and brought to me on May 15th.

CICONIA ALBA.

One of the most conspicuous birds, common everywhere. A regular colony was found in some high trees on April 18th. Many nests contained four or five eggs, all slightly incubated.

PLATALEA LEUCORODIA.

Not common. About fourteen pairs were found breeding on an island of rushes growing in deepish water; on May 14th several nests contained one egg, and one three. They were much like those of the Purple Heron, but smaller and placed nearer to the water.

PLEGADIS FALCINELLUS.

Glossy Ibises were rather rare : we only met with them once, when three pairs had nests among those of the small Herons. These were placed in bushes six feet from the water ; they are deeper and many rushes are used in their construction. Ibises seem to be irregular in their time of breeding, for last season many nests were found with fresh eggs in June, while ours contained three or four eggs on April 27th.

ANAS BOSCAS.

Common everywhere, in spite of the wretched females being shot on their nests on every opportunity by the Spaniards. Fresh eggs were found April 29th ; the first young on May 8th.

CHAULELASMUS STREPERUS.

The Gadwall was common ; we found a nest on April 28th, with ten fresh eggs, in a clump of spear-rush twenty yards from the edge of a lake, and saw several other eggs taken by the "egg-eaters."

MARMARONETTA ANGUSTIROSTRIS.

I was lucky to hit upon a good season for Marbled Teal, for they are often absent from Spain for several years in succession, while at other times they appear in numbers. We found them very common, both on the marisma and on the river. They are confiding, and it is easy to obtain specimens, as they often allow a boat to approach within gun-shot, and even if they rise wildly they fly straight back. Their flight is swift, and they can turn with rapidity. A nest was found on May 14th in a clump of rushes close to a laguna, with eleven fresh eggs and a little down ; another some distance from the water and close to the side of a fence-post, on May 18th, contained the large number of fifteen eggs. It was a slight hollow in high grass, lined with down and feathers.

QUERQUEDULA CRECCA.

On May 23rd I flushed a small Duck from a dry spot on Lucio Real, which I thought was a Teal ; there was no nest, but a slight hollow had been scratched out under a thistle.

We returned to the spot on May 25th, when the female again rose close to me and proved that I was right. The nest then contained two eggs.

DAFILA ACUTA.

On Lucio Real one of my men flushed and killed a Pintail from her nest on May 5th. The nest contained eight incubated eggs and a plentiful supply of down. I am, moreover, perfectly convinced that I found another nest with six broken eggs near the same spot on May 23rd. In Scotland, abroad, and with tame birds, I have always noticed that the Pintail makes its nest in much more exposed situations than any other European Duck with which I am acquainted. The eggs seem to be of two colours—very light yellowish and a distinct green: the down from the nest cannot be mistaken for that of any other Duck known to me. A Spaniard who has spent his life duck-shooting on the marisma, when shown the eggs, exclaimed, "They belong to the 'Pato rabudo.'" I questioned him closely, and he assured me that he had several times found the nest and shot the female, and that this species always nested in the open, thus confirming my own experience. Such men kill so many during the winter, and the bird is so well known to them, that I have no reason to doubt my informant. Possibly these Pintails may be "pricked" birds, which are unable to leave in the spring, and therefore remain to breed.

FULIGULA FERINA.

A few observed. One nest was taken on the marisma on May 15th, with slightly incubated eggs; it was under a bunch of scrub in a wet place. A party collecting Coot's eggs showed me four eggs which, I believe, also belonged to this species.

COLUMBA PALUMBUS.

Not very common. Nests found from April 26th onwards.

TURTUR COMMUNIS.

Very common, and large flocks were seen on April 17th. Only one nest was actually found, on May 11th, and that accidentally.

PTEROCLES ALCHATA.

Local: very wild and difficult of approach; seen in small parties of six or seven at the beginning of May and later in pairs. As the birds rise they utter their harsh cry and continue calling on the wing. I never saw one settle within sight. We obtained four sets of three or two eggs from May 22nd to May 25th, all fresh. No nest is made, but the eggs are deposited under the shelter of a thistle or other plant on the sun-baked marisma. In my small experience they are not very difficult to find; the female always behaved in the same way, rising at a distance of from sixty to a hundred yards and uttering her wild cry, whereupon I marked the spot as nearly as possible, put down a handkerchief, came back twenty yards and commenced to hunt in a circle, and in every case the eggs were found. If a *pair* rise, there are no eggs.

CACCABIS RUFA.

Common, in spite of nets, traps, call-birds, and every engine of destruction, in and out of season. One nest of thirteen eggs was seen on May 2nd.

COTURNIX COMMUNIS.

Common, and persecuted all the year round. Fresh eggs were shown me on April 14th, and young were seen on the wing on May 12th.

RALLUS AQUATICUS.

Probably more common than would appear. We only found one nest, which was in high rushes, on May 2nd; it contained two eggs.

PORZANA BAILLONI.

Common, if you know where to look for it. We found eleven nests with eggs from May 2nd to May 20th, and many others which had been trampled upon by cattle or had had the eggs eaten by rats and pigs! In every case but one the nests were placed in low rushes and grass growing in water from a few inches to a foot or more deep. They were never in the middle of the swamp, but within twenty yards of the sides. The nests are neat little structures, made of dry

rush, with the growing rushes bent over to form a perfect cover. They are generally hard to find, as it is often impossible to see the eggs from above ; but at times they are easily discovered, the very cleverness of the bird leading to detection. A ball of reeds excites suspicion : open it, and the eggs are disclosed. They vary considerably in size and colour ; one nest, from which I shot the female, contained examples almost like those of the Siberian Jay, while others were brown throughout. A complete clutch never consisted of fewer than six eggs, and sometimes of seven or eight, one contained nine. They are often piled up one above the other. They are usually smaller and always more glossy than eggs of the Little Crake. One nest, containing eight eggs, was found in the marisma, near a colony of Black Terns.

GALLINULA CHLOROPUS.

Common. We saw many nests with eggs from May 4th to May 26th, on the wet marisma.

FULICA ATRA.

Very abundant. The eggs are collected by the basketful and sold for eating. Nests seen from April 19th ; young on May 18th.

FULICA CRISTATA.

Local : breeds earlier than the last species ; we found some eggs on the point of hatching on April 27th and all the others were much incubated. Col. Irby says (Ornith. Straits of Gibraltar, ed. 2, p. 145) " the eggs are not to be distinguished from those of the Common Coot (*F. atra*). " With due respect for such an authority, my own experience is different and so is that of Mr. F. C. Selous. In all the nests of the Crested Coot which I saw the eggs were much redder in ground-colour and also larger : out of the hundreds taken on the marismas (where *F. cristata* does *not* breed) I never found one approaching such a colour ; in fact, a single Crested Coot's egg could easily be detected if placed with any number of the others. The nests I saw were also different, being more substantial and not covered with the bower-like screen

of bent rushes. I hatched one of the Crested Coot's eggs in bed; the chick is very different from that of *F. atra*.

OTIS TARDA.

Common. Two eggs which we found on May 7th were placed on a bare spot in the middle of a large grass enclosure; there was no nest—not even a scratch. The female must have run a long way from the eggs, as she rose nowhere near them. On May 10th we obtained two more eggs. Both sets were slightly incubated.

OTIS TETRAX.

Local, but not rare. Little Bustards are often found in large grass enclosures devoted to the maturing of fighting-bulls, where it is not very safe to hunt for them. On April 23rd we found two nests, one with a single egg, the other with an egg lying near, on which my man put his foot! On April 30th we returned, and the nest with one egg was empty, whilst the nest which had been empty contained one egg. I revisited the spot on May 12th, and found that both nests had been trampled upon by cattle. I hunted about, and eventually flushed a female; took a cast back, and fifteen yards from where she rose found a nest of five beautiful olive-green eggs. I believe that this is an unusually large clutch. All three nests were rather deep scratches lined with a few bits of dead grass. The eggs were nearly fresh.

ÆDICNEMUS SCOLOPAX.

The Thick-knee is common on the marismas. Several eggs were laid on the bare ground, without any sign of a nest, and often in the footprints of horses or cattle. Fresh eggs were found from May 1st to May 26th; they are sometimes laid at intervals of several days.

GLAREOLA PRATINCOLA.

Abundant. It was not till May 12th that we found full sets of three eggs, laid on the sun-baked marismas. In one case two nests were within a few inches of each other. Pratincoles have a curious trick of extending their wings on the ground and flapping them as if wounded, the head being

always turned towards the intruder, and this long before eggs are laid. I killed one bird which was nearly white.

ÆGIALITIS CANTIANA.

Common. A set of three eggs was found on April 30th. Curiously enough, these eggs were more incubated than others found subsequently.

VANELLUS VULGARIS.

Very common; nesting on the dry marisma—often in company with Redshanks. Fresh eggs were seen on April 28th.

RECURVIROSTRA AVOCETTA.

Abundant. On one little island of particularly dry mud I saw a dozen or more nests within a circle of fifteen yards. The eggs are taken by the score for eating; the white is transparent when boiled, and they are palatable.

HIMANTOPUS CANDIDUS.

Very numerous and more widely distributed than the last species, breeding on hard or wet ground; sometimes the nest is slightly raised in some low scrub, while there is more material in it than is generally the case with the *Limicolæ*. When the nesting-places are disturbed the birds shew extreme anxiety, flying round and uttering a plaintive cry. Our first nest was found on April 30th.

TOTANUS CALIDRIS.

Abundant. I once saw a regular flock rise from their nests when a Raven came by; they dashed at him continually, and twice made him settle on the ground; eventually he departed down wind, followed by the screaming hosts for some distance. Fresh eggs were seen from April 30th.

STERNA MINUTA.

Common, laying on the dry marisma. The first eggs were taken on May 13th, but it was not until the 26th that we found any number. No nests are made, the eggs being placed on the hard ground. One little colony with eight sets could have been covered with a tablecloth. Two eggs seem to be the usual number, and only once did I see three.

STERNA ANGLICA.

Common. The nests are robbed by the natives almost daily and the wretched birds are continually forced to change their breeding-places, which are generally on a dry spot on the marisma. At one place I saw quite a hundred single eggs dropped on the bare ground without the slightest attempt at a nest. The eggs are three in number, if you are lucky enough to find a full set. I often found those of the Gull-billed Tern in nests of the Slender-billed Gull, which at first led me to believe that the Terns sometimes constructed nests for themselves.

HYDROCHELIDON HYBRIDA.

This, to my mind the most graceful of all the European Terns, was exceedingly common, breeding in large numbers on the wet marisma. The nests are a mass of dead reeds floating on the water, two feet deep, and placed in growing rushes. They are just like those of Grebes, with the centre hollowed out and a few green rushes added. Laying commenced about April 30th, as we found a few nests on that day with one and two eggs; on May 3rd any number, mostly containing three eggs. I never saw one of these birds splash into the water when feeding in the way that the Little, Common, and Arctic Terns so frequently do, the food being taken from the surface.

HYDROCHELIDON NIGRA.

Numerous, breeding in much the same situations as *H. hybrida*, but in much shallower water; the nests were smaller, rather better made, and often fixed to a lump of mud or cow-dung which nearly reached the surface of the water. On May 13th numbers of them contained slightly incubated eggs.

LARUS GELASTES.

The Slender-billed Gulls are not common, and are in a fair way to be driven off the marisma if the present persecution goes on. They breed in small colonies, or sometimes singly, along with Gull-billed Terns. On April 30th I found six nests, each containing one egg; a few days later not a bird was to be seen, the egg-gatherers had driven

them off. On May 23rd I took fourteen single eggs and substituted those of the Gull-billed Tern. On May 25th all the nests had been cleared and the birds driven away by a party of three men with large baskets. Further on we *did* find a few nests which had been overlooked, two of which contained three eggs, and most of the others two—all “just turned.” One set were quite white, many others white with black and grey markings, and few lightish brown on a buff ground with darker marks. The nests were substantial, some being lined with a few Flamingo’s feathers, and all were placed on dry land, near the edge of a laguna.

I should like to mention that I twice saw a black- (not *brown*-) headed Gull, which I believe to have been *L. melanocephalus*. It was evidently not breeding and was quite alone, while it flew right off on our approach.

PODICIPES NIGRICOLLIS.

Uncommon. I saw Black-necked Grebes and found two nests on the Laguna Santa Olalla on April 29th which looked ready for laying ; but as they were still empty on May 14th, I concluded that the eggs had been taken. Several nests were found on a rushy swamp on Lucio Real in May, the eggs being stained a dark mahogany colour.

PODICIPES FLUVIATILIS.

Numerous. Nests were found from May 2nd onward ; one contained the large number of seven eggs.

VI.—On a small Collection of Birds from Efulen in Cameroon,
W. Africa. By R. BOWDLER SHARPE, LL.D.

(Plate IV.)

MR. G. L. BATES, who has sent us several good collections from French Congo and Gaboon, has now forwarded a very interesting series of birds from Efulen, in the German Colony of Cameroon, and, in a letter, has given me the following account of the locality :—

“ This, as you know, is a forest-country, entirely covered with a large and thick growth of trees, except where they

have been cleared off the land around the native villages. The birds of the forest are largely distinct from those found in the gardens and the low bushes in the abandoned gardens in the clearings.

“All the Weavers and Weaver-Finches that I have sent are confined to the clearings, unless it be the black red-breasted ‘Edumvin’ [*Spermospiza guttata*], which I have seen building in high trees in the forest. The ‘Nyas’ [*Hyphantornis cucullatus*] is the bird that builds the best-woven nests, with long tube-like entrances opening downwards. The different kinds of conical-billed birds fly about grassy places in twittering flocks; they build in tall grass or bushes, and form large gourd-shaped nests of fine grass-tops, with very narrow entrances opening upwards.

“There are a number of birds which I take to be Thrushes. They include the ‘Etyityo’ [*Turdus saturatus*], which was found in the village-clearing, the different kinds of ‘Ntyoñ’ [*Alethe castanea*, *A. alexandri*] and ‘Akalat’ [*Turdinus albipectus*, *Callene cyornithopsis*], the Akwalat [*Neocossyphus poensis*], and the Ôtok [*Eurillas cameronensis*], all the small birds being procured on June 20th and 21st and on July 11th, and being caught by boys with snares on the ground in the forest, though some of them may be seen in the clearings too. The ‘Ôtok’ has a respectable little song.

“The Sun-birds are confined to the village clearings. They are not only pretty and lively, but utter sweet notes, very fine and soft.

“There are two Flycatchers of different styles: one is called ‘Ngweñ’ [*Diaphophya castanea*], and another ‘Kuletyañ,’ in imitation of its note, besides which there are two or three similar to those sent from Benito and Bata. They are usually seen sitting on bushes or trees, leaving their perch at intervals for a short circuit in the air to catch a flying insect. In the forest I have sometimes heard a sharp noise in the tree-tops like the snapping of a small whip often repeated, and I think it is made by birds of this sort, probably with their wings.

“The Woodpeckers and Barbets are very characteristic of the forest-country, full of decaying trees and branches in

which insects work. I have several times seen a dead tree inhabited by a colony of the little 'Ôvôl' [? *Barbatula du-chailui*] with the trunk and branches bored full of holes. These birds were not seen or heard tapping on the trees, and they did not run over the perpendicular tree-trunks like Woodpeckers, but had to take to the wing in order to change their position. The stiff-tailed Woodpeckers found here are often heard tapping in the forest, but not loudly like those at home, as if for the sake of making a noise. The man who killed the four large 'Ôvôl' on July 23rd said that there was a big colony of them in a dead tree. He climbed a neighbouring tree, so as to be within short range of the birds' holes, and shot nine of them, as they came and went, with his cross-bow and little palm-stalk arrows. All nine were males, for I examined them all in order to get specimens of both sexes. The little 'Ômvek' [*Barbatula scolopacea*] is continually heard uttering its monotonous 'kom ! kom ! kom !,' the same note being repeated a dozen times, nearly as rapidly as the ticking of a watch, with a short pause—then the same thing occurs again as long as you have the patience to listen. It reminds one of the tinkling of a hammer on a small anvil.

"The little Owl called 'Ôbimven' is, according to the unvarying testimony of the natives, the bird that makes a weird call or song, usually heard at evening time, which consists of three clear notes, the last in a trilling tone, uttered rapidly and repeatedly. It reminds me a little of the cry of the Whip-poor-Will in America.

"Hornbills are very characteristic of the forests, the rushing noise of their wings and their harsh cries being always heard where there are trees and vines with the fruits they love. The crested 'Bebone' is generally (? always) seen near the ground in the forest, and is said to make a practice of following flocks of monkeys overhead in the trees, and picking up the fruits they drop."

The species represented in Mr. Bates's collection are as follows :—

1. *TYMPANISTRIA TYMPANISTRIA* (Temm. & Knip); Reichen. J. f. O. 1896, p. 50; Shelley, B. Africa, i. p. 138 (1896); Sharpe, Hand-l. B. i. p. 83 (1899).

♂. Efulen, June 6, 1901. "Ôdu."

2. *ACCIPITER MELANOLEUCUS* A. Smith; Shelley, B. Africa, i. p. 152 (1896); Sharpe, Hand-l. B. i. p. 254 (1899).

Astur melanoleucus Reichen. J. f. O. 1896, p. 50.

♀ ad. Efulen, May 30, 1901. "Obi."

3. *ASTUR CASTANILIUS* (Bp.); Sharpe, t. c. p. 248.

Astur macroscelides Reichen. t. c. p. 50.

♀ juv. Efulen, June 15, 1901. "Obi."

4. *SCOPS HOLERYTHRA* Sharpe, Bull. B. O. C. xii. p. 3 (1901).

♂. Efulen, June 4, 1901. "Akuñ."

This species has a yellow bill like *Scops icterorhyncha* of Shelley, which is its nearest ally, but it is uniformly bright cinnamon. It is difficult to believe that it can be the rufous phase of *S. icterorhyncha*, as there is no sign of the large white spots on the scapulars and wing-coverts, and the whole of the under surface is bright cinnamon, varied with small "arrow-head" streaks and spots of white, but without any sign of the dusky vermiculation which is a feature of *S. icterorhyncha*.

5. *HAPALODERMA ÆQUATORIALE* Sharpe, Bull. B. O. C. xii. p. 3 (1901).

♂ ad. Minkale, May 22, 1901.

This specimen I have compared with a large series of *H. narina* in the British Museum, and I find that it differs from all of them in the coarseness of the blackish vermiculations on the wing-coverts, which are very different in appearance when the two species are compared.

6. *BYCANISTES ALBOTIBIALIS* Cab.† & Reichen.; Reichen. t. c. p. 16; Shelley, t. c. p. 114; Sharpe, Hand-l. B. ii. p. 69.

♂. Efulen, June 22, 1901. "Miam."

♀. „ June 1, 1901.

7. MELITTOPHAGUS AUSTRALIS (Reichen.) ; Sharpe, Hand-l. B. ii. p. 73.

Meropiscus australis Reichen. t. c. p. 19.

♀ ♀. Efulen, June 11, 1901.

These two specimens are remarkable for the *eau-de-nil* tint of the blue rump and upper tail-coverts, as well as of the two centre tail-feathers. On comparing them with the Aruwimi-River examples obtained by the late Mr. Jameson, I find that three of the latter have these parts much more cobalt-blue, but a fourth scarcely differs from the Efulen pair, and I think that the greener appearance is due to the fresher plumage of the birds.

8. HELIOBUCCO BONAPARTII (Hartl.) ; Shelley, t. c. p. 127 ; Sharpe, Hand-l. B. ii. p. 180.

Gymnobucco bonapartei Reichen. t. c. p. 12.

♂. Efulen, May 25, 1901.

9. BARBATULA DUCHAILLUI Cass. ; Shelley, t. c. p. 128 ; Reichen. t. c. p. 12 ; Sharpe, t. c. p. 181.

♂. Minkale, May 22, 1901. "Ēvegeṽō."

10. BARBATULA SCOLOPACEA (Temm.) ; Shelley, t. c. p. 129 ; Reichen. t. c. p. 12 ; Sharpe, t. c. p. 182.

♂. Efulen, June 3, 1901. "Ômvek."

11. DIAPHOROPHYIA CASTANEA (Fraser) ; Shelley, t. c. p. 97 ; Reichen. t. c. p. 21 ; Sharpe, Hand-l. B. iii. p. 245 (1901).

♀. Efulen, May 21, 1901.

♂. „ June 3, 1901. "Ngweñ."

12. BLEDA SYNDACTYLA (Swains.) ; Sharpe, Hand-l. B. iii. p. 322.

Xenocichla syndactyla Shelley, t. c. p. 81.

♂. Efulen, June 20, 1901. "Ntyeñ."

13. ANDROPADUS SERINUS (J. & E. Verr.) ; Reichen. J. f. O. 1896, p. 36.

Bleda serina Sharpe, t. c. p. 322.

Pyrhrurus serinus Shelley, t. c. p. 64.

♂ ♀. Efulen, June 24, 1901. "Atya."

14. EURILLAS CAMERONENSIS Reichen.

Andropadus cameronensis, Reichen. J. f. O. 1896, p. 63.

♀. Efulen, June 3, 1901. "Ôtok."

The dimensions of the bill and wing (2.55 inches) are smaller than in *E. virens*, but the character of the nasal bristles seems to be one of great variability, and I doubt whether the two species can be separated.

15. TURDINUS BATESI. (Plate IV. fig. 2.)

Turdinus batesi Sharpe, Bull. B. O. C. vol. xii. p. 2 (1901).

♀. Efulen, June 3, 1901.

A very distinct species, easily recognisable by its black head, grey eyebrow, and black ear-coverts; the belly and throat are white.

16. TURDINUS ALBIPECTUS Reichen. J. f. O. 1887, p. 209; Shelley, t. c. p. 66.

♀ ♀. Efulen, June 20, 1901. "Akalat."

This is a small species with a very distinct white belly and fulvescent flanks. It is closely allied to *T. fulvescens*, but the latter has the under tail-coverts fulvous brown like the flanks, whereas *T. albipectus* has them chestnut or ferruginous, in strong contrast to the white belly.

17. STIPHRORNIS GABONENSIS Sharpe; Reichen. J. f. O. 1896, p. 65; Shelley, t. c. p. 67.

♂ ♀ ♀. Efulen, June 19-21, 1901.

All three specimens agree very well with the type in the British Museum.

18. ALETHE CASTANEA (Cass.); Reichen. t. c. p. 65; Shelley, t. c. p. 83.

♂ ♀. Efulen, June 3-6, 1901. "Ngofio" or "Ntyoñ."

19. ALETHE ALEXANDRI Sharpe, Bull. B. O. C. xii. p. 4 (1901).

♂ ♀. Efulen, June 6, 1901. "Ntyoñ."

A dark form of *A. castanonota* Sharpe, from the Gold Coast, but having the ear-coverts deep black. Capt. Shelley says that the last-named bird is the *Criniger poliocephalus*

of Bonaparte (Consp. i. p. 262). If this be the case, the original description is most carelessly composed.

20. CALLENE CYORNITHOPSIS. (Plate IV. fig. 1.)

Callene cyornithopsis Sharpe, Bull. B. O. C. xii. p. 4 (1901).

♂. Efulen, June 20, 1901. "Akalat."

This has the appearance of a female *Cyornis*, and is apparently quite different from any bird described from Africa. Compared with *C. isabellæ*, the colours are quite unlike; and it will be noted that Mr. Bates has determined the type specimen to be a male.

21. NEOCOSSYPHUS POENSIS (Fraser); Shelley, B. Africa, i. p. 85; Reichen. t. c. p. 66.

Cossypha poensis Sharpe, Cat. B. Brit. Mus. vii. p. 36.

♂. Efulen, June 20-21, 1901. "Akwalat."

22. TURDUS SATURATUS (Cab.); Sharpe, in Seebohm's Monogr. Turdidæ, part vii. (1899); Reichen. t. c. p. 66.

Turdus pelios pt. Shelley, t. c. p. 88.

♂ ad. Minkale, May 21, 1901. "Etyityo."

♂ juv. Efulen, May 25, 1901.

♂ ad. „ June 5, 1901.

23. CISTICOLA RUFIPILEATA Reichen. J. f. O. 1891, p. 69, 1896, p. 43.

Cisticola ruficapilla (Fraser, nec A. Smith); Sharpe, Cat. B. Brit. Mus. vii. p. 248.

♂. Efulen, June 1, 1901. "Abankwate."

24. CYANOMITRA CYANOLEMA (Jard.); Shelley, B. Africa, ii. p. 130 (1900).

Cinnyris cyanolema Reichen. t. c. p. 65.

♂. Efulen, June 24, 1901. "Nzesel."

25. SPORÆGINTHUS MELPODUS (Vieill.); Sharpe, Cat. B. Brit. Mus. xiii. p. 325 (1890).

Estrelda melpoda Shelley, B. Africa, i. p. 30; Reichen. t. c. p. 34.

♂. Efulen, May 27, 1901.

26. SPERMESTES POENSIS (Fraser); Sharpe, Cat. B. Brit. Mus. xiii. p. 262; Shelley, B. Africa, i. p. 28.

♂ ♀. Efulen, May 24 to June 1, 1901. "Ejile."

It is extremely difficult to distinguish *Spermestes stigmatorphus* from *S. poensis*, as the amount of white spots or bars on the upper tail-coverts is subject to great variation. Some specimens have no bars or spots at all, others a few, while in others these white marks are plentiful. This variation is observable in typical specimens from Fernando Po: the Museum has three of the original types.

27. HETERHYPHANTES NIGRICOLLIS (Vieill.); Sharpe, Cat. B. Brit. Mus. xiii. p. 415; Shelley, t. c. p. 37.

Symplectes nigricollis Reichen. t. c. p. 30.

♂. Efulen, May 29, 1901.

28. HYPHANTORNIS CUCULLATUS (P. L. S. Müll.); Sharpe, Cat. B. Brit. Mus. vii. p. 451; Shelley, t. c. p. 40.

♂. Efulen, May 27, 1901. "Nyas."

♂. „ June 8, 1901.

♀. „ June 13, 1901.

One of the male birds has the chestnut of the hind-neck mixed with bright yellow, and shews an approach to *H. bohndorffi*.

29. SPERMOSPIZA GUTTATA (Vieill.); Sharpe, t. c. p. 500; Reichen. t. c. p. 33; Shelley, t. c. p. 32.

♂ ♂. Efulen, June 15-17, 1901. "Edumvin."

VII.—On the Collections of Birds made by Sir Harry Johnston, K.C.B., in Equatorial Africa. By R. BOWDLER SHARPE, LL.D., F.Z.S., &c., Assistant Keeper, Department of Zoology, British Museum.

(Plate V.)

THE following is a list of the specimens collected by Sir Harry Johnston during his travels as H.B.M. Commissioner in Uganda and the neighbouring territories. Sir Harry entered the Uganda Protectorate and commenced collecting immediately, his assistant being Mr. Walter G. Doggett. Birds

were collected wherever they travelled about the Uganda Protectorate, in the Mau, Baringo, Suk, Nandi, Elgon, Busoga, Uganda, Unyoro, Toro, and Ankole districts, as well as to a small extent on the northern islands of the Victoria Nyanza. Collections were also specially made on the flanks of Mt. Ruwenzori, and in the Semliki Valley and the forests on the border of the Congo Free State. All the skinning and preserving was done by Mr. W. G. Doggett, of whose services Sir Harry Johnston speaks very appreciatively, and the skins of the birds are certainly in excellent condition. Mr. Doggett was at first in Sir Harry's personal employment, but recently he has been appointed to the service of the Uganda Protectorate, and in that service he is shortly about to return to Uganda.

Especial reference has been made to the following works :—

- HARTERT, E.—Appendix to Ansorge's 'Under the African Sun,' 1899, pp. 325–355.
 NEUMANN, O.—"Beiträge zur Vogelfauna von Ost- und Central-Afrika," J. f. O. 1898, pp. 227–305 ; 1899, pp. 33–74 ; 1900, pp. 185–313.
 HARTERT, E.—"Another small Contribution to African Ornithology," Nov. Zool. vii. pp. 25–53 (1900).
 REICHENOW, A.—"Die Vögel Afrikas," Band I. Parts 1, 2 (1900–1901).

All the specimens collected by Sir Harry Johnston have been generously presented by him to the British Museum, where we have much appreciated the donation of so many large birds, which are not often sent home by travellers on the march.

1. FRANCOLINUS GRANTI.

Francolinus granti Hartl. ; Neum. J. f. O. 1898, p. 303 ; Sharpe, Hand-l. B. i. p. 23 (1899) ; Hartert, App. Afr. Sun, p. 330 (1899) ; Reichen. Vög. Afrikas, i. p. 496 (1901).

No. 642. ♂ ad. Lake Baringo, March 1901.

2. FRANCOLINUS SCHUETTI.

Francolinus schuetti, Cab. ; Neum. J. f. O. 1898, p. 304

(Bukoba) ; Sharpe, Hand-l. B. i. p. 25 (1899) ; Reichen. Vög. Afrikas, i. p. 468 (1901).

a. ♂ ad. Kikuyu Forest, 6400 feet, July 16, 1900. Iris bluish grey.

3. *PTERNISTES INFUSCATUS*.

Pternistes infuscatus Cab. ; Neum. J. f. O. 1898, p. 302 ; Sharpe, Hand-l. B. i. p. 26 (1899) ; Hartert, App. Afr. Sun, p. 331.

Pternistes leucoscepus infuscatus Reichen. Vög. Afrikas, i. p. 455 (1901).

a. ♀ ad. Lake Baringo, 4000 feet, Dec. 6, 1899. Iris light hazel ; naked skin orange, shading into pale yellow on the neck.

4. *NUMIDA REICHENOWI*.

Numida reichenowi Ogilvie-Grant ; Neum. J. f. O. 1898, p. 298 ; Sharpe, Hand-l. B. i. p. 41 (1899) ; Hartert, App. Afr. Sun, p. 331 ; id. Nov. Zool. vii. p. 30 (1900) ; Reichen. Vög. Afrikas, p. 437 (1901).

No. 6. ♂ ad. Lake Naivasha, 6300 feet, Oct. 15. Iris light hazel.

5. *VINAGO NUDIROSTRIS*.

Vinago nudirostris Swains. ; Sharpe, Hand-l. B. i. p. 52 (1899).

Vinago calva nudirostris Neum. J. f. O. 1898, p. 294 ; Hartert, App. Afr. Sun, p. 329 ; id. Nov. Zool. vii. p. 30 ; Reichen. Vög. Afrikas, p. 396 (1901).

No. 286. ♂ ad. Mt. Ruwenzori, 6000 feet, Sept. 1900. Iris cobalt-blue.

This specimen, according to Dr. Reichenow's "Key," should be *V. nudirostris*, as it is decidedly more yellow than green on the head, neck, and under parts ; but instead of having the grey neck-band distinct, it is only faintly indicated. I think that Prof. Reichenow must have made a slip in the description of the characters which he gives for these two birds, as in the British Museum series, a broad grey neck-band is accompanied by a greener tint on the head and under surface

of the body. The yellower birds, which apparently always have a more extended bare forehead, should bear the name of *V. nudirostris*; but there seems to me to be yet a third race of these Green Pigeons from Gaboon and other parts of tropical West Africa. This is a very dingy olive-green tinted bird with scarcely any indication of grey neck-collar. It is in every respect such a dark green bird that it is not possible to confound it with *V. calva* and *V. nudirostris*. I think that this race must bear the name of *V. pytiropsis* of Bonaparte (C. R. xxxix. p. 837, 1854). Dr. Reichenow quotes a similar name as given by Jules Verreaux in 1851 (Rev. et Mag. de Zool. p. 421), but I fail to find this name as published by Verreaux. Specimens of *Vinago pytiropsis* (Bp.) are in the British Museum from Gaboon (*Maison Verreaux*, sent as *V. nudirostris*) (*DuChaillu*); Prince's Island (*F. Newton*).

Of the specimens included in the 'Catalogue' by Count Salvadori under the heading of *Vinago calva* (xxi. pp. 22, 23), the following should, I think, be referred to *V. nudirostris*, the rest remaining as *V. calva*:—*b.* W. Africa (*Verreaux*); *v.* R. Niger (*Dr. Baikie*); *x.* Shonga (*W. A. Forbes*); *m', n'.* Semmio and Sassa, Niam-Niam (*F. Bohndorff*); *i'.* Angola (*Monteiro*); *o'-r'.* Kilimanjaro (*Sir H. H. Johnston*). In addition, we have examples from Kikuyu (*R. Crawshay*); Machako's (*Dr. Hinde*), and Marungu (*Major Kenrick*).

6. COLUMBA GUINEA.

Columba guinea (L.); Salvad. Cat. B. Brit. Mus. xxi. p. 226 (1893); Neum. J. f. O. 1898, p. 291; Sharpe, Hand-l. i. p. 69 (1899); Reichen. Vög. Afrikas, p. 401 (1901).

♂ ad. Mt. Elgon.

7. TURTUR LUGENS.

Turtur lugens (Rüpp.); Sharpe, Hand-l. B. i. p. 78 (1899); Reichen. Vög. Afrikas, p. 408 (1901).

No. 638. ♂. Lake Baringo, March 20, 1901.

8. SAROTHRURA PULCHRA.

Corethrura pulchra Neum. J. f. O. 1898, p. 273.

Sarothrura pulchra (J. E. Gray) ; Sharpe, Hand-l. B. i. p. 103 (1899) ; Reichen. Vög. Afrikas, i. p. 286 (1900).

No. 295. ♂ ad. N'tebi, Oct. 1900. Iris hazel.

9. PORPHYRIO PORPHYRIO.

Porphyrio porphyrio (L.) ; Sharpe, Hand-l. i. p. 108 (1899) ; Reichen. Vög. Afrikas, p. 290 (1900).

No. 59. ♂ ad. N'tebi, March 30, 1900. Iris red.

No. 87. ♂ ad. N'tebi, April 2, 1900.

10. FULICA CRISTATA.

Fulica cristata Gm. ; Neum. J. f. O. 1898, p. 274 ; Sharpe, Hand-l. B. i. p. 110 (1899) ; Reichen. Vög. Afrikas, p. 296 (1900) ; Hartert, Nov. Zool. vii. p. 27.

Nov. 293. ♀ ad. Lake Saka, near Fort Portal, Toro, 5000 feet, June 26, 1900. Iris red.

11. PODICIPES CAPENSIS.

Podiceps capensis (Salvad.) ; Sharpe, Hand-l. B. i. p. 113 (1899).

Podiceps capensis Neum. J. f. O. 1898, p. 246.

Columbus capensis, Reichen. Vög. Afrikas, i. p. 18 (1900).

No. 273. ♀ ad. Lake Saka, 5000 feet, July 1900.

No. 274. ♀ ad. W. Toro, Crater Lake, 4000 feet, August 1900. Iris carmine.

Nos. 275, 276. Nestlings.

12. HEMIPARRA CRASSIROSTRIS.

Defilippia crassirostris (De Filippi) ; Neum. J. f. O. 1898, p. 263 ; Sharpe, Hand-l. B. i. p. 148 (1899).

Hemiparra crassirostris, Reichen. Vög. Afrikas, i. p. 184 (1900).

No. 53. Ad. N'tebi, March 28, 1900. Iris red.

No. 76. ♀ ad. N'tebi, April 2, 1900.

One of these specimens has two of the secondaries marked with white externally and also on the inner web, but only on one wing, so that this peculiarity may be due to albinism. Dr. Reichenow, however, mentions individuals from German East Africa which he believes to be hybrids between *H. crassirostris* and *H. leucoptera*.

13. STEPHANIBYX MELANOPTERUS.

Stephanibyx melanopterus (Cretzschm.) ; Sharpe, Hand-l. B. i. p. 152 (1899) ; Reichen. Vög. Afrikas, i. p. 179 (1900).
Chettusia melanoptera Hartert, Nov. Zool. vii. p. 27.
 Nos. 639, 640. ♂ ♀ ad. Lake Baringo, March 1901.

14. ÆGIALITIS PECUARIA.

Ægialitis pecuaria (Temm.) ; Neum. J. f. O. 1898, p. 260 ; Sharpe, Hand-l. B. i. p. 155 (1899).
Charadrius varius Vieill. ; Reichen. Vög. Afrikas, i. p. 171 (1900).
 No. 252. ♂ ad. Toro, Lake Kikurango, 2200 feet, July 1900. Iris light hazel.

15. HIMANTOPUS HIMANTOPUS.

Himantopus himantopus (Linn.) ; Neum. J. f. O. 1898, p. 266 ; Sharpe, Hand-l. B. i. p. 156 (1899) ; Reichen. Vög. Afrikas, i. p. 207 (1900).
 No. 253. ♂ ad. Lake Albert Edward, 5000 feet, July 1900.

16. TRINGOIDES HYPOLEUCUS.

Tringoides hypoleucus (Linn.) ; Neum. J. f. O. 1898, p. 268 ; Sharpe, Hand-l. B. i. p. 161 (1899) ; Hartert, App. Afr. Sun, p. 327 ; Reichen. Vög. Afrikas, i. p. 224 (1900).
 a. ♂ ad. Lake Baringo, 4000 feet, Dec. 9, 1899.

17. ANCYLOCHILUS SUBARQUATUS.

Ancylochilus subarquatus (Güld.) ; Neum. J. f. O. 1898, p. 266 ; Sharpe, Hand-l. B. i. p. 164 (1899).
Tringa subarquata Hartert, App. Afr. Sun, p. 327 ; Reichen. Vög. Afrikas, i. p. 230 (1900).
 Nos. 254, 255. ♂ ♀ ad. Katwe, Albert Edward Lake, 5000 feet, July 1900. Iris light hazel.

18. ACTOPHILUS AFRICANUS.

Actophilus africanus (Gm.) ; Reichen. Vög. Afrikas, i. p. 276 (1900).
Phyllopezus africanus (Gm.) ; Neum. J. f. O. 1898, p. 275 ; Sharpe, Hand-l. B. i. p. 168 (1899) ; Hartert, App. Afr. Sun, p. 328.

No. 7. ♂ ad. Lake Naivasha, 6300 feet, Oct. 10, 1899.
Iris dark hazel.

19. *MICROPARRA CAPENSIS*.

Microparra capensis (Smith); Sharpe, Hand-l. B. i. p. 169 (1899); Reichen. Vög. Afrikas, i. p. 270 (1900).

No. 247. ♀ ad. Lake Saka, near Fort Portal, 5000 feet, June 26, 1900. Iris light hazel.

20. *GLAREOLA PRATINCOLA*.

Glareola pratincola (Linn.); Neum. J. f. O. 1898, p. 258; Sharpe, Hand-l. i. p. 170 (1899); Hartert, Nov. Zool. vii. p. 27.

Glareola fusca (Linn.); Reichen. Vög. Afrikas, i. p. 144 (1900).

No. 248. ♀ ad.; Nos. 249, 250, 251. ♂ ad. Lake Kikurango, 3200 feet, July 1900. Iris light hazel.

21. *GALACTOCHRYSEA EMINI*.

Galactochrysea emini (Shelley); Sharpe, Hand-l. B. i. p. 171 (1899).

Glareola emini, Reichen. Vög. Afrikas, i. p. 147 (1900).

No. 68. ♀ ad. N'tebi, April 2, 1900. Iris light hazel.

22. *ÆDIGNEMUS VERMICULATUS*.

Ædignemus vermiculatus Cab.; Neum. J. f. O. 1898, p. 264; Sharpe, Hand-l. B. i. p. 172 (1899); Reichen. Vög. Afrikas, i. p. 200 (1900); Hartert, Nov. Zool. vii. p. 27.

No. 49. ♂ ad. N'tebi, March 25, 1900. Iris pale yellow.

Nos. 107, 108. Nestlings. N'tebi, 3800 feet, April 22, 1900. Iris grey.

23. *LISSOTIS MELANOGASTER*.

Lissotis melanogaster (Rüpp.); Neum. J. f. O. 1898, p. 269; Sharpe, Hand-l. B. i. p. 175 (1899).

Otis melanogaster Reichen. Vög. Afrikas, i. p. 256 (1900); Hartert, App. Afr. Sun, p. 327; id. Nov. Zool. vii. p. 27.

Nos. 22, 23. ♀ ♂ ad. Ravine, 7600 feet, Nov. 3, 1899. Iris pale yellow.

24. IBIS ÆTHIOPICA.

Ibis æthiopica (Lath.); Neum. J. f. O. 1898, p. 277; Sharpe, Hand-l. B. i. p. 184 (1899); Hartert, App. Afr. Sun, p. 328; Reichen. Vög. Afrikas, i. p. 321 (1901).

a. Imm. Ugowe Bay, Victoria Nyanza.

25. CICONIA CICONIA.

Ciconia ciconia (Linn.); Sharpe, Hand-l. B. i. p. 190 (1899); Reichen. Vög. Afrikas, i. p. 345 (1901).

a. Ad. [Victoria Nyanza.]

26. ANASTOMUS LAMELLIGERUS.

Anastomus lamelligerus Temm.; Neum. J. f. O. 1898, p. 278; Sharpe, Hand-l. B. i. p. 191 (1899); Reichen. Vög. Afrikas, i. p. 335 (1901).

a. Ad. Ugowe Bay, Victoria Nyanza.

Nos. 75, 76. ♂ ad. N'tebi, April 2, 1900. Iris dark hazel.

27. BALÆNICEPS REX.

Balæniceps rex Gould; Sharpe, Hand-l. B. i. p. 193 (1889); Reichen. Vög. Afrikas, i. p. 357 (1901).

No. 88. ♀ ad. N'tebi, 3800 feet, April 19, 1900. Iris Naples yellow.

No. 400. ♂ ad. Victoria Nyanza, Nov. 25, 1900.

28. ARDEA GOLIATH.

Ardea goliath Cretzschm.; Sharpe, Hand-l. B. i. p. 194 (1899); Reichen. Vög. Afrikas, i. p. 376 (1901).

Megerodius goliath Neum. J. f. O. 1898, p. 286.

No. 90. ♂ ad. N'tebi, 3800 feet, April 1, 1900. Iris bright yellow.

29. PYRRHERODIAS PURPUREA.

Pyrrherodias purpurea (Linn.); Sharpe, Hand-l. B. i. p. 193 (1899).

Ardea purpurea Neum. J. f. O. 1898, p. 285; Reichen. Vög. Afrikas, i. p. 377 (1901).

Phoyx purpurea Hartert, Nov. Zool. vii. p. 29.

Nos. 85, 86. ♂ ♀ ad. Port Alice, April 2, 1900. Iris yellow.

30. MESOPHOYX BRACHYRHYNCHA.

Mesophoyx brachyrhyncha (Brehm); Sharpe, Hand-l. B. i. p. 195 (1899).

Herodias brachyrhyncha Reichen. Vög. Afrikas, i. p. 389 (1901).

Herodias intermedia Neum. J. f. O. 1898, p. 286.

No. 2. ♂ ad. Lake Naivasha, 6300 feet, Oct. 10. Iris pale yellow.

31. GARZETTA GARZETTA.

Garzetta garzetta (Linn.); Sharpe, Hand-l. B. i. p. 197 (1899).

Herodias garzetta Reichen. Vög. Afrikas, i. p. 387 (1901).

No. 81. ♂ ad. hiem. N'tebi, April 2, 1900. Iris yellow.

32. BUTORIDES ATRICAPILLUS.

Butorides atricapilla (Afzel.); Sharpe, Hand-l. B. i. p. 199 (1899).

Butorides atricapillus Neum. J. f. O. 1898, p. 284; Reichen. Vög. Afrikas, i. p. 370 (1901).

No. 81. ♂ ad. N'tebi, April 2, 1900. Iris yellow.

33. ERYTHROCYNUS RUFIVENTRIS.

Erythrocnus rufiventris (Sundev.); Sharpe, Hand-l. B. i. p. 201 (1899); Reichen. Vög. Afrikas, i. p. 370 (1901).

No. 102. ♂ ad. N'tebi, 3800 feet, April 21, 1900. Feet pale orange-chrome; iris pale yellow.

34. BUBULCUS LUCIDUS.

Bubulcus lucidus (Rafin.); Sharpe, Hand-l. B. i. p. 202 (1899).

Bubulcus ibis (Linn.); Neum. J. f. O. 1898, p. 285; Hartert, App. Afr. Sun, p. 328; id. Nov. Zool. vii. p. 29; Reichen. Vög. Afrikas, i. p. 381 (1901).

No. 72. ♂ ad. N'tebi, April 2, 1900. Iris yellow.

No. 104. ♀ ad. N'tebi, 3800 feet, April 21, 1900. Iris pale yellow.

35. SARCIDIORNIS MELANONOTA.

Sarcidiornis melanonota (Penn.); Neum. J. f. O. 1898, p. 256; Sharpe, Hand-l. B. i. p. 208.

Sarkidiornis melanonotus Reichen. Vög. Afrikas, i. p. 129 (1900).

No. 631. ♀ ad. Uvuma Island, Victoria Nyanza, Jan. 1901.

36. *NETTOPUS AURITUS*.

Nettopus auritus (Bodd.) ; Sharpe, Hand-l. B. i. p. 209 (1899) ; Reichen. Vög. Afrikas, i. p. 127 (1900) ; Neum. J. f. O. 1898, p. 256 ; Hartert, Nov. Zool. vii. p. 26.

No. 82. ♀ ad. ; No. 83. ♂ juv. ; No. 84. ♂ ad. N'tebi, April 2, 1900. Bill orange ; iris dark hazel.

37. *DENDROCYCNA VIDUATA*.

Dendrocygna viduata (Linn.) ; Neum. J. f. O. 1898, p. 256 ; Sharpe, Hand-l. B. i. p. 214 (1899) ; Reichen. Vög. Afrikas, i. p. 124 (1900).

No. 93. ♂ ad. N'tebi, 3800 feet, April 19, 1900. Iris pale yellow.

38. *DENDROCYCNA FULVA*.

Dendrocygna fulva (Gm.) ; Sharpe, Hand-l. B. i. p. 214 (1899) ; Reichen. Vög. Afrikas, i. p. 126 (1900).

No. 90. ♀ ad. N'tebi, 3800 feet, April 19, 1900. Iris pale yellow.

39. *ANAS UNDULATA*.

Anas undulata Dubois ; Sharpe, Hand-l. B. i. p. 216 (1899) ; Reichen. Vög. Afrikas, i. p. 113 (1900).

Nos. 62, 63. ♂ ♀ ad. N'tebi, March 30, 1900. Iris dark hazel.

No. 74. ♀ ad. N'tebi, April 2, 1900. Iris dark hazel.

40. *NETTIUM PUNCTATUM*.

Nettium punctatum (Burch.) ; Neum. J. f. O. 1898, p. 255 ; Sharpe, Hand-l. B. i. p. 219 (1899) ; Hartert, App. Afr. Sun, p. 326.

Anas punctata Reichen. Vög. Afrikas, i. p. 120 (1900).

Nos. 70, 71. ♂ ♀ ad. N'tebi, April 2, 1900. Iris light hazel.

41. PÆCILONETTA ERYTHORHYNCHA.

Pæcilonetta erythrorhyncha (Gm.) ; Neum. J. f. O. 1898, p. 255 ; Sharpe, Hand-l. B. i. p. 220 (1899).

Anas erythrorhyncha Reichen. Vög. Afrikas, i. p. 118 (1900).

No. 5. ♂ ad. Lake Naivasha, 6500 feet, Oct. 11, 1900. Iris Naples yellow.

42. THALASSORNIS LEUCONOTA.

Thalassornis leuconotus (Smith) ; Sharpe, Hand-l. B. i. p. 226 (1899) ; Reichen. Vög. Afrikas, i. p. 106 (1900).

Nos. 259, 260. ♂ ad. Lake Saka, 5000 feet, June 27, 28, 1901. Iris light hazel.

43. PHALACROCORAX LUGUBRIS.

Phalacrocorax gutturalis Reichen. J. f. O. 1892, p. 133 (Bukoba) ; Neum. J. f. O. 1898, p. 249.

Phalacrocorax lucidus lugubris Reichen. Vög. Afrikas, i. p. 90 (1900).

Phalacrocorax lucidus (part.) Sharpe, Hand-l. B. i. p. 232. Nos. 79, 80. ♀. N'tebi, April 2, 1900. Iris green.

44. PHALACROCORAX AFRICANUS.

Phalacrocorax africanus (Gm.) ; Neum. J. f. O. 1898, p. 251 ; Sharpe, Hand-l. B. i. p. 234 (1899) ; Reichen. Vög. Afrikas, i. p. 93 (1900) ; Hartert, Nov. Zool. vii. p. 26.

Nos. 55, 56. ♂ imm. N'tebi, March 30, 1900.

Nos. 73, 75. ♂ ♀ imm. N'tebi, April 2, 1900.

45. PLOTUS RUFUS.

Plotus rufus Daud. ; Sharpe, Hand-l. B. i. p. 236 (1899).

Plotus levaillanti Neum. J. f. O. 1898, p. 252.

Anhinga rufa Reichen. Vög. Afrikas, i. p. 95 (1900).

Nos. 59, 61. Ad. N'tebi, March 30, 1900. Iris red.

No. 78. Ad. N'tebi, April 2, 1900.

46. PELECANUS RUFESCENS.

Pelecanus rufescens Gm. ; Neum. J. f. O. 1898, p. 263 ; Sharpe, Hand-l. B. i. p. 239 (1899) ; Reichen. Vög. Afrikas, i. p. 182 (1900).

No. 256. ♀ ad. Lake Albert Edward, July 1900. Iris light hazel.

47. *PSEUDOGYPS AFRICANUS*.

Pseudogyps africanus (Salvad.); Neum. J. f. O. 1899, p. 35; Sharpe, Hand-l. B. i. p. 242 (1899); Reichen. Vög. Afrikas, i. p. 519 (1901).

No. 257. ♂ ad. Ruachara River, near R. Semliki, Busongora, 3100 feet, July 1900. Iris light hazel.

a. ♂ ad. Guas 'Ngishu Plateau, May 1901.

48. *LOPHOGYPS OCCIPITALIS*.

Lophogyps occipitalis (Burch.); Neum. J. f. O. 1899, p. 35; Sharpe, Hand-l. B. i. p. 242 (1899); Reichen. Vög. Afrikas, i. p. 514 (1901).

No. 258. ♂ ad. Semliki Valley, July 1900. Iris light hazel.

49. *CIRCUS ÆRUGINOSUS*.

Circus æruginosus (Linn.); Sharpe, Hand-l. B. i. p. 246 (1899); Reichen. Vög. Afrikas, i. p. 539 (1901).

No. 65. ♀ ad. N'tebi, March 30, 1900. Iris light hazel.

50. *ASTUR SPARSIMFASCIATUS*.

Astur sparsimfasciatus Reichen. Orn. MB. 1895, p. 97; Neum. J. f. O. 1899, p. 40; Sharpe, Hand-l. B. i. p. 248 (1899).

No. 240. ♂ ad. Fort Portal, 4700 feet, June 26, 1900. Iris yellow.

Compared with true *A. tachiro* this species is very much lighter underneath; it has the dark cross-bands much more distinct, and not so broad as in the South-African species; it has also pure white under tail-coverts without any dusky cross-bars. The under wing-coverts are, moreover, pure vinous without dusky cross-bars, and the tint of the rufous colour on the sides of the body and the thighs is very light vinous, not inclining to chestnut as in *A. unduliventer*.

51. *BUTEO AUGUR*.

Buteo augur Rüpp.; Neum. J. f. O. 1899, p. 50; Sharpe,

Hand-l. B. i. p. 255 (1899) ; Hartert, Nov. Zool. vii. p. 31 ; Reichen. Vög. Afrikas, i. p. 592 (1901).

No. 17. ♀ ad. Ravine, 7600 feet, Nov. 10, 1899. Iris light hazel.

No. 42. ♂ ad. Ravine, 7600 feet, Jan. 25, 1900.

52. *EUTOLMAËTUS SPILOGASTER*.

Eutolmaëtus spilogaster (Bp.) ; Sharpe, Hand-l. B. i. p. 262 (1899).

Hieraëtus spilogaster Reichen. Vög. Afrikas, i. p. 579 (1901).

Nisaëtus spilogaster Neum. J. f. O. 1899, p. 44.

No. 3. ♀ ad. Lake Naivasha, 6300 feet, Oct. 15, 1899

53. *SPIZAËTUS CORONATUS*.

Spizaëtus coronatus (Daud.) ; Sharpe, Hand-l. B. i. p. 263 (1899) ; Reichen. Vög. Afrikas, i. p. 576 (1901).

a. ♀ ad. N'tebi, April 1901.

54. *LOPHOAËTUS OCCIPITALIS*.

Lophoaëtus occipitalis (Daud.) ; Sharpe, Hand-l. B. i. p. 264 (1899) ; Neum. J. f. O. 1899, p. 43 ; Hartert, App. Afr. Sun, p. 332 ; Reichen. Vög. Afrikas, i. p. 582 (1901).

a. Ad. Ugowe Bay, Victoria Nyanza.

55. *HALIAËTUS VOCIFER*.

Haliaëtus vocifer (Daud.) ; Sharpe, Hand-l. B. i. p. 267 (1899) ; Neum. J. f. O. 1899, p. 46 ; Reichen. Vög. Afrikas, i. p. 605 (1901).

a, b. ♂ imm. N'tebi, 3800 feet, April 19, 1900. Iris light hazel.

56. *MACHÆRHAMPHUS ANDERSSONI*.

Machærhamphus anderssoni (Gurney) ; Sharpe, Hand-l. B. i. p. 270 (1899) ; Reichen. Vög. Afrikas, i. p. 596 (1901).

a. ♂ ad. Kampala, Oct. 1900.

This bird was kept in confinement for some time by Mr. Alexander White. The species is new to the fauna of Uganda.

57. *BUBO LACTEUS*.

Bubo lacteus (Temm.); Sharpe, Hand-l. B. i. p. 283 (1899); Neum. J. f. O. 1899, p. 54; Reichen. Vög. Afrikas, i. p. 650 (1901).

No. 298. ♂ ad. N'tebi, July 1900.

58. *GLAUCIDIUM PERLATUM*.

Glaucidium perlatum (Vieill.); Sharpe, Hand-l. B. i. p. 298 (1899); Neum. J. f. O. 1899, p. 57; Reichen. Vög. Afrikas, i. p. 674 (1901).

a. Ad. Lake Baringo, 4000 feet, Dec. 23, 1899.

59. *PŒOCEPHALUS SATURATUS*.

Pœocephalus saturatus Sharpe, Bull. Brit. Orn. Club, xi. p. 67 (1901).

a, b. ♂ ♀ ad. North Ankole, 3500 feet, Aug. 1900. Iris light hazel.

During a recent visit of Mr. Oscar Neumann to England, I went over with him the series of *Pœocephalus meyeri* and its allies in the Museum collection. He agreed with me that *P. saturatus* is distinct from the ordinary forms. It is very dark brown above, indeed almost blackish with a faint shade of olive-green; the lower back and rump inclining to cobalt-blue; the upper tail-coverts being rather yellowish green; the breast and abdomen emerald-green.

60. *AGAPORNIS PULLARIA*.

Agapornis pullaria (Linn.); Neum. J. f. O. 1899, p. 63; Sharpe, Hand-l. B. ii. p. 35 (1900).

No. 467. ♂ ad. N'tebi, 3900 feet, Dec. 1900.

61. *EURYSTOMUS AFER*.

Eurystomus afer (Lath.); Sharpe, Hand-l. B. ii. p. 47 (1900); Neum. J. f. O. 1900, p. 209; Hartert, Nov. Zool. vii. p. 33.

No. 50. ♂ ad. N'tebi, March 26, 1900. Iris red.

62. *ISPIDINA PICTA*.

Ispidina picta (Bodd.); Neum. J. f. O. 1900, p. 215; Sharpe, Hand-l. B. ii. p. 54 (1900).

Nos. 653, 654. ♂ ♀ ad. Lake Baringo, March 1901.

63. BUCORAX CAFFER.

Bucorax caffer Bocage; Sharpe, Hand-l. B. ii. p. 63 (1900); Neum. J. f. O. 1900, p. 210.

No. 22. ♀ ad. Ten miles from Ravine, 7600 feet, Oct. 28, 1899. Iris pale yellow; naked parts of head scarlet.

64. LOPHOCEROS MELANOLEUCUS.

Lophoceros melanoleucus (Licht.); Hartert, App. Afr. Sun, p. 334; Sharpe, Hand-l. B. ii. p. 67 (1900); Neum. J. f. O. 1900, p. 213; Hartert, Nov. Zool. vii. p. 33.

No. 18. ♂ ad. Ravine, 7600 feet, Nov. 6, 1899.

65. LOPHOCEROS NASUTUS.

Lophoceros nasutus (Linn.); Sharpe, Hand-l. B. ii. p. 68 (1900); Neum. J. f. O. 1900, p. 212.

a. ♀ ad. Lake Baringo, 4000 feet, Dec. 10, 1899. Iris pale yellow.

66. IRRISOR VIRIDIS.

Irrisor viridis Licht.; Neum. J. f. O. 1899, p. 220; Hartert, App. Afr. Sun, p. 336; Sharpe, Hand-l. B. ii. p. 70 (1900).

a. ♀ ad. Lake Baringo, 4000 feet, Dec. 8, 1899.

67. RHINOPOMASTUS SCHALOWI.

Rhinopomastus schalowi Neum. J. f. O. 1899, p. 221; Sharpe, Hand-l. B. ii. p. 71 (1900).

Rhinopomastus cyanomelas (Vieill.); Hartert, App. Afr. Sun, p. 337.

No. 21. ♀ ad. Ravine, 7600 feet, Nov. 4, 1899.

68. MELITTOPHAGUS CYANOSTICTUS.

Melittophagus cyanostictus Cab.; Sharpe, Hand-l. B. ii. p. 72 (1900).

Melittophagus pusillus cyanostictus Neum. J. f. O. 1900, p. 219.

Melittophagus sharpei Hartert, Nov. Zool. vii. p. 35.

No. 659. ♂ ad. Lake Baringo, March 1901.

69. CAPRIMULGUS DONALDSONI.

Caprimulgus donaldsoni Sharpe, Bull. Brit. Orn. Club, iv.

p. xxix (1895) ; id. P. Z. S. 1895, p. 503 ; id. Hand-l. B. ii. p. 88 (1900).

a. ♂ ad. Lake Baringo, 4000 feet, Dec. 23, 1899.

The specimen agrees with the type of this pretty Goat-sucker, which was discovered by Dr. Donaldson Smith at Hargeisa in Somali-land.

70. *COSMETORNIS VEXILLARIUS*.

Cosmetornis vexillarius (Gould) ; Sharpe, Hand-l. B. ii. p. 82 (1900) ; Neum. J. f. O. 1900, p. 223.

No. 272. ♂ ad. North Ankole, July 1900. Iris light hazel.

71. *COLIUS BERLEPSCHI*.

Colius leucotis berlepschi Hartert, App. Afr. Sun, p. 333 (1899) ; id. Nov. Zool. vii. p. 31 ; Neum. J. f. O. 1900, p. 188.

Colius berlepschi Hartert ; Sharpe, Hand-l. B. ii. p. 145 (1900).

No. 9. ♂ ad. Ravine, 7600 feet, Nov. 2, 1899.

The dark race with the uniform brown back, black throat, and silvery-grey ear-coverts which Mr. Hartert has separated as *C. leucotis berlepschi*, seems to me to be a fairly well-marked species. We have specimens in the Museum from Machako's (*Dr. Hinde*), Nairobi (*Mackinder Collection*), and I am inclined to add an example from Wadelai, although this is slightly paler brown and has faint indications of bars on the hind-neck. I think that the brown plumage of these Colies bleaches quickly, and that a slight barring on the hind-neck becomes visible in the faded livery.

C. affinis, which is never quite without bars, varies a good deal as regards their distinctness, and also as regards the black on the throat, which appears to me to become more distinct as the light edges of the feathers get gradually worn off.

72. *TURACUS HARTLAUBI*.

Turacus hartlaubi (Fischer & Reichenow) ; Neum. J. f. O. 1899, p. 72 ; Sharpe, Hand-l. B. ii. p. 153 (1900) ; Hartert, Nov. Zool. vii. p. 31.

No. 637. ♂ ad. Nandi, March 1901.

73. *GALLIREX JOHNSTONI*. (Plate V.)

Gallirex johnstoni Sharpe, Bull. Brit. Orn. Club, xi. p. 57 (1901).

No. 285. ♀ ad. Mt. Ruwenzori, 7000 feet, Sept. 1900. Iris light hazel.

This is a beautiful species, easily distinguished from the two previously known, *G. porphyreolophus* and *G. chlorochlamys*, by its metallic-green crown and the crimson patch on the back of the neck, as well as by the steel-blue chin and upper throat. It has a ruddy stain on the fore-neck and chest, as in *G. porphyreolophus*, but differs from both the allied species in the deep violet-blue of the wings and back, the lower back and rump being black.

74. *MUSOPHAGA ROSSÆ*.

Musophaga rossæ Gould; Neum. J. f. O. 1899, p. 68; Sharpe, Hand-l. B. ii. p. 154 (1900).

No. 52. ♂ ad. N'tebi, March 27, 1900. Iris dark hazel.

75. *CORYTHÆOLA CRISTATA*.

Corythæola cristata (Vieill.); Neum. J. f. O. 1899, p. 67; Sharpe, Hand-l. B. ii. p. 154 (1900); Hartert, Nov. Zool. vii. p. 31.

No. 48. ♂ ad. N'tebi, March 22, 1900. Iris pale yellow.

Nos. 418, 419. ♂ ad. N'tebi, Dec. 8, 1900. Iris hazel.

76. *SCHIZORHIS ZONURA*.

Schizorhis zonura Rüpp.; Sharpe, Hand-l. B. ii. p. 154 (1900).

Chizaerhis zonura Neum. J. f. O. 1899, p. 68.

No. 468. Ad. East of Victoria Nyanza, Nov. 1900.

Nos. 632, 634. ♂ ad. Uvuma Island, Victoria Nyanza, Jan. 11, 1901.

77. *GYMNOSCHIZORHIS LEOPOLDI*.

Gymnoschizorhis leopoldi (Shelley); Sharpe, Hand-l. B. ii. p. 154 (1900); Neum. J. f. O. 1899, p. 71.

Nos. 270, 271. ♂ ♀ ad. North Ankole, 3500 feet, Aug. 1900. Iris black.

a. Ad. Ugowe Bay, Victoria Nyanza.

78. COCCYSTES CAFER.

Coccystes cafer (Licht.); Sharpe, Hand-l. B. ii. p. 156 (1900).

Coccystes afer (Leach); Hartert, Nov. Zool. vii. p. 31.

No. 643. ♂ ad. Lake Baringo, March 1901.

79. CENTROPUS SUPERCILIOSUS.

Centropus superciliosus Hempr. & Ehr.; Hartert, App. Afr. Sun, p. 334; Sharpe, Hand-l. B. ii. p. 168 (1900); Neum. J. f. O. 1900, p. 191; Hartert, Nov. Zool. vii. p. 32.

No. 1. ♀ ad. Lake Naivasha, 6300 feet, Oct. 10. Iris carmine.

80. LYBIUS ÆQUATORIALIS.

Lybius æquatorialis (Shelley); Sharpe, Hand-l. B. ii. p. 178 (1900).

Melanobucco æquatorialis Neum. J. f. O. 1900, p. 196.

Melanobucco bidentatus æquatorialis Hartert, Nov. Zool. vii. p. 32.

No. 284. ♀ ad. Mt. Ruwenzori, 5600 feet, Sept. 1900. Iris light hazel.

81. TRICHOLÆMA DIADEMATUM.

Tricholæma diadematum (Heugl.); Sharpe, Hand-l. B. ii. p. 180 (1900).

No. 27. ♂ ad. Ravine, 7600 feet, Nov. 6, 1899.

82. TRACHYPHONUS BOEHMI.

Trachyphonus böhmi Fischer & Reichenow; Hartert, App. Afr. Sun, p. 335; Sharpe, Hand-l. B. ii. p. 186 (1900); Neum. J. f. O. 1900, p. 199.

Nos. 649, 650. ♂ ♀ ad. Lake Baringo, March 1901.

83. MESOPICUS SPODOCEPHALUS.

Mesopicus spodocephalus (Bp.); Sharpe, Hand-l. B. ii. p. 223 (1900).

No. 655. Imm. Lake Baringo, March 1901.

84. DENDROPICUS HEMPRICHI.

Dendropicus hemprichi (Hempr. & Ehr.); Sharpe, Hand-l. B. ii. p. 218 (1900).

a. ♀ ad. Lake Baringo, 4000 feet, Dec. 21, 1899.

85. TERPSIPHONE CRISTATA.

Terpsiphone cristata (Gm.); Neum. J. f. O. 1900, p. 227; Sharpe, Hand-l. B. iii. p. 264 (1901).

No. 26. ♂ imm. Ravine, 7600 feet, Nov. 4, 1899. Iris pale yellow.

86. EURILLAS EUGENIUS.

Eurillas eugenius (Reichenow); Sharpe, Hand-l. B. iii. p. 325 (1901).

Andropadus eugenius Hartert, App. Afr. Sun, p. 349; id. Nov. Zool. vii. p. 47.

Andropadus latirostris eugenius, Neum. J. f. O. 1900, p. 292.

No. 287. ♂ ad. Mpanga Forest, Sept. 22, 1900. Iris hazel.

87. CRATEROPUS SHARPII.

Crateropus sharpei Reichen.; Neum. J. f. O. 1900, p. 302; Jackson, Ibis, 1901, p. 79.

No. 261. ♂ ad. West Ankole, July 1900.

88. TURDUS BOCAGEI.

Turdus bocagei (Cab.); Sharpe, in Seebohm's Monogr. Turdidæ, i. p. 331 (1899); Hartert, App. Afr. Sun, p. 354; Neum. J. f. O. 1900, p. 311.

No. 277. Ad. North Ankole, 3500 feet, Aug. 1900.

89. TURDUS ELGONENSIS.

Merula elgonensis Sharpe, Ibis, 1891, p. 445, 1892, p. 160.

Turdus elgonensis Sharpe, in Seebohm's Monogr. Turdidæ, i. p. 311, pl. lxxii. (1899); Neum. J. f. O. 1900, p. 311; Jackson, Ibis, 1901, p. 74.

Nos. 105, 106. ♂ ♀. N'tebi, 3800 feet, April 22, 1900. Iris hazel.

90. COSSYPHA HEUGLINI.

Cossypha heuglini Hartl.; Hartert, Nov. Zool. vii. p. 52; Jackson, Ibis, 1901, p. 72.

No. 289. ♂ ad. Western Uganda, Sept. 1900.

No. 645. ♂ ad. Lake Baringo, March 1901.

91. *POGONOCICHLA INTENSA*.

Pogonocichla intensa Sharpe, Bull. Brit. Orn. Club, xi. p. 67 (1901).

No. 100. ♂ ad. N'tebi, 3800 feet, April 22, 1900.

The bird from N'tebi differs conspicuously from the other species of *Pogonocichla* in being deep orange-yellow on the rump, tail-feathers, and under surface of the body. The head and throat are of a darker slaty blue than in *P. orientalis*, its nearest ally, and the back is a dark olive-brown, instead of being yellowish green.

92. *LANIUS EXCUBITORIUS*.

Lanius excubitorius (Prév. et Des Murs); Sharpe, Ibis, 1892, p. 597; Hartert, App. Afr. Sun, p. 340; Neum. J. f. O. 1900, p. 263; Hartert, Nov. Zool. vii. p. 38; Jackson, Ibis, 1901, p. 33.

Nos. 263, 279. ♂ ♀ ad. North Ankole, 3500 feet, Aug. 1900.

93. *LANIUS HUMERALIS*.

Lanius humeralis Stanl.; Sharpe, Ibis, 1892, p. 597; Jackson, Ibis, 1901, p. 34.

Lanius collaris humeralis Hartert, App. Afr. Sun, p. 340; Neum. J. f. O. 1900, p. 264; Hartert, Nov. Zool. vii. p. 138.

No. 24. ♀ ad. Ravine, 7600 feet, Oct. 28, 1899.

94. *CINNYRIS CYANESCENS*.

Cinnyris cyanescens Reichen. Orn. MB. vii. p. 171 (1899); Sharpe, Ibis, 1900, p. 496.

No. 12. ♂ ad. Ravine, 7600 feet, Nov. 2, 1899. Iris black.

This specimen seems to be of the same race as one from Ukambani in Mr. Jackson's collection, which I determined as *C. cyanescens* (Ibis, 1900, p. 496). I must again say that I think it will be difficult to distinguish this species from *C. niassæ*.

95. *CINNYRIS FALKENSTEINI*.

Cinnyris falkensteini Fischer & Reichen.; Sharpe, Ibis, 1900, p. 496; Jackson, Ibis, 1899, p. 634; Hartert, App. Afr.

Sun, p. 350; Shelley, B. Africa, ii. pt. 1, p. 66, pl. iii. fig. 1 (1900); Neum. J. f. O. 1900, p. 299; Sharpe, Ibis, 1900, p. 496.

No. 264. ♂ ad. Western Ankole, July 1900.

96. *DREPANORHYNCHUS REICHENOWI*.

Drepanorhynchus reichenowi Fischer; Sharpe, Ibis, 1891, p. 590; Jackson, Ibis, 1899, p. 630; Neum. J. f. O. 1900, p. 301.

Nectarinia reichenowi Shelley, B. Africa, ii. pt. 1, p. 29 (1900).

No. 109. ♂ ad. N'tebi, 3800 feet, April 1, 1900. Iris black.

97. *NECTARINIA KILIMENSIS*.

Nectarinia kilimensis Shelley; Sharpe, Ibis, 1891, p. 591; Jackson, Ibis, 1899, p. 631; Hartert, App. Afr. Sun, p. 351; Shelley, B. Africa, ii. pt. 1, p. 28, pl. i. fig. 1 (1900); Hartert, Nov. Zool. vii. p. 49; Neum. J. f. O. 1900, p. 300.

Nos. 10, 24. ♂ ad. Ravine, 7600 feet, Nov. 2, 3, 1899.

98. *CINNYRIS KIRKI*.

Cinnyris kirki Shelley; Sharpe, Ibis, 1891, p. 592; Jackson, Ibis, 1899, p. 632.

Chalcomitra kirki Shelley, B. Africa, ii. pt. 1, p. 107 (1900).

Chalcomitra kirki kalckreuthi Neum. J. f. O. 1900, p. 296.

No. 14. ♂ juv. Ravine, 7600 feet, Nov. 2, 1899.

No. 25. ♂ ad. Ravine, 7600 feet, Nov. 3, 1899.

99. *CINNYRIS DOGGETTI*, sp. n.

Similis *C. kirki*, sed plaga metallica frontali aureo-viridi et gutture diverse colorato, chalybeo nec purpurascenticupreo distinguenda. Long. tot. 5·3 poll., culm. 1·0, alæ 2·7, caudæ 1·95, tarsi 0·65.

Nos. 19, 20. ♂ ad. Ravine, 7600, Nov. 2, 1899. Iris black.

It will be noticed that these two specimens were procured at the Ravine at the same height (7600 feet) on the 2nd of November, the day before an example of the true *C. kirki* was obtained. There is nothing about the plumage of these

specimens, which are in excellent feather, to suggest that the differences in the metallic colour of the forehead and throat have been produced by damp or by any artificial means, and consequently I am constrained to consider them distinct, strange though the circumstances of their capture may be.

I have named the species after Mr. W. G. Doggett, who acted as Sir Harry Johnston's taxidermist, and is now the Naturalist to the Government of the Uganda Protectorate.

100. CINNYRIS GUTTURALIS.

Cinnyris gutturalis inæstimata Hartert, App. Afr. Sun, p. 351 (1899); id. Nov. Zool. vii. p. 51.

Chalcomitra gutturalis Shelley, B. Africa, ii. pt. 1, p. 93 (1900).

Chalcomitra gutturalis inæstimata Neum. J. f. O. 1900, p. 296.

No. 11. ♂ ad. Ravine, 7600 feet, Nov. 2, 1899.

This specimen belongs to the northern form which Mr. Hartert has called *C. inæstimata*, but which Captain Shelley does not consider worthy of separation from *C. gutturalis*.

101. CINNYRIS CUPREA.

Cinnyris cuprea (Shaw); Sharpe, Ibis, 1891, p. 593; Hartert, App. Afr. Sun, p. 350; Jackson, Ibis, 1899, p. 633; Neum. J. f. O. 1900, p. 299; Hartert, Nov. Zool. vii. p. 50; Shelley, B. Africa, ii. pt. 1, p. 36 (1900).

No. 265. ♂ ad. Western Ankole, July 1900.

102. MACRONYX CROCEUS.

Macronyx croceus (V.); Sharpe, Ibis, 1891, p. 589; Jackson, Ibis, 1899, p. 629; Hartert, App. Afr. Sun, p. 348; Neum. J. f. O. 1900, p. 290.

No. 15. ♂ ad. Ravine, 7600 feet, Nov. 4, 1899.

103. SERINUS ALBIFRONS.

Serinus albifrons (Sharpe); Jackson, Ibis, 1899, p. 621; Neum. J. f. O. 1900, p. 289; Hartert, Nov. Zool. vii. p. 43.

Crithagra kilimensis Richmond, Auk, xiv. p. 155 (1897).

No. 23. ♀ ad. Ravine, 7600 feet, Nov. 6, 1899. Iris light hazel.

Mr. Richmond has kindly sent to me for examination his type of *S. kilimensis*, which turns out to be the same as my *S. albifrons*, as already suggested (Ibis, 1899, p. 622).

104. *PENTHETRIA LATICAUDA*.

Penthetria laticauda (Licht.) ; Sharpe, Ibis, 1891, p. 245 ; Jackson, Ibis, 1899, p. 598.

Coliuspasser laticauda Neum. J. f. O. 1900, p. 286.

a. Ad. Nandi, 5000 feet, April 1901.

105. *DREPANOPECTES JACKSONI*.

Drepanoptes jacksoni Sharpe, Ibis, 1891, p. 247, pl. v. ; Jackson, Ibis, 1899, p. 599 ; Hartert, Nov. Zool. vii. p. 41.

No. 641. ♂ ad. Lake Baringo, March 1901.

106. *UROBRACHYA MEDIA*, sp. n.

Similis *U. traversi* et plaga humerali aurantiaca insignis, sed supercilio castaneo et gastræo toto castaneo lavato distinguenda. Long. tot. 6·2 poll., culm. 0·7, alæ 3·3, caudæ 2·2, tarsi 0·95.

Nos. 263, 263. ♂ imm. West Ankole, 3200 feet, July 1900. Iris light hazel.

The two specimens procured by Sir Harry Johnston, although not in full plumage, are very much darker than any examples of *U. phænicea* or *U. traversi* of a similar age in the collections of the British Museum or of Mr. F. J. Jackson. The rufous portion of the wing-coverts is more chestnut than cinnamon, while the eyebrows, sides of face, and neck, as well as the under surface of the body, are also pervaded with chestnut, giving the Ankole birds a much darker appearance.

107. *PYROMELANA XANTHOMELANA*.

Pyromelana xanthomelana (Rüpp.) ; Sharpe, Ibis, 1891, p. 248 ; Jackson, Ibis, 1899, p. 601.

Orynx xanthomelas Neum. J. f. O. 1900, p. 285.

Nos. 16, 28. ♂ ♀ ad. Ravine, 7600 feet, Nov. 6, 1899. Iris black.

108. PYROMELANA FRANCISCANA.

Pyromelana franciscana (Isert); Sharpe, Ibis, 1892, p. 248; Jackson, Ibis, 1899, p. 601.

Pyromelana franciscana pusilla Hartert, Bull. B. O. C. xi. p. 71.

a. ♂ ad. Ravine, 7600 feet.

I am unable to appreciate the differences in size on which my friend Mr. Hartert proposes to separate a race as *P. f. pusilla*. The specimen in Sir Harry Johnston's collection, as well as those presented by Lord Delamere and Emin Pasha, agree in measurements with others from Nigeria and the Gold Coast, and I am afraid that *Pyromelana pusilla* will not stand, even as a subspecies.

109. PYROMELANA FLAMMICEPS.

Pyromelana flammiceps (Swains.); Sharpe, Ibis, 1891, p. 247; Jackson, Ibis, 1899, p. 601; Hartert, Afr. Sun, p. 344; Neum. J. f. O. 1900, p. 285.

a, b. ♂ ad. Nandi, 5000 feet, April 1901.

110. HETERHYPHANTES REICHENOWI.

Heterhyphantes reichenowi (Fischer); Sharpe, Ibis, 1891, p. 252; Jackson, Ibis, 1899, p. 610.

Otyphantes reichenowi Neum. J. f. O. 1900, p. 282.

No. 13. ♂ ad. Ravine, 7600 feet, Nov. 3, 1899. Iris black.

111. HYPHANTORNIS ABYSSINICUS.

Hyphantornis abyssinicus (Gm.); Sharpe, Ibis, 1891, p. 253; Jackson, Ibis, 1899, p. 616; Hartert, Nov. Zool. vii. p. 40.

No. 29. ♂ imm. Ravine, 7600 feet, Nov. 7, 1899. Iris black.

112. MALIMBUS RUBRICOLLIS.

Malimbus rubricollis (Swains.); Jackson, Ibis, 1899, p. 617.

Nos. 465, 466. ♂ ♀ ad. N'tebi, 3700-3800 feet, Dec. 1900. Iris hazel.

113. PLOCEIPASSER MELANORHYNCHUS.

Ploceipasser melanorhynchus Rüpp.; Sharpe, Ibis, 1891,

p. 250 ; Jackson, Ibis, 1899, p. 602 ; Hartert, Nov. Zool. vii. p. 41 ; Neum. J. f. O. 1900, p. 283.

No. 657. ♂ ad. Lake Baringo, March 1901.

114. *ORIOLOUS ROLETI*.

Oriolus larvatus Sharpe (nec Licht.), Ibis, 1891, p. 243.

Oriolus rolleti Salvad ; Jackson, Ibis, 1899, p. 595 ; Hartert, Afr. Sun, p. 341.

No. 291. ♀ ad. North Ankole, August 1900. Iris pale yellow.

a. Ad. Nandi Forests, April 1901. Feet pale blue ; iris hazel.

115. *AMYDRUS WALLERI*.

Amydrus walleri Shelley, Ibis, 1880, p. 335, pl. viii. ; Sharpe, Cat. B. Brit. Mus. xiii. p. 164 (1890) ; Neum. J. f. O. 1900, p. 281.

Amydrus elgonensis Sharpe, Ibis, 1891, p. 242 ; Jackson, Ibis, 1899, p. 591.

Amydrus nyasæ Shelley, Ibis, 1898, pp. 554, 557.

a, b. ♂ ♀ ad. Mount Elgon, 7000 feet. Iris yellow.

The two specimens procured by Sir Harry Johnston are slightly larger than the type of *A. elgonensis*, having their wings 4·9 inches as against 4·65 in the type, which is a female. On re-comparing the whole series of these *Amydri* in the Museum I have come to the conclusion that *A. elgonensis* and *A. nyasæ* must be united under the heading of *A. walleri*. The length of bill, wing, and tail varies considerably, and I believe that not much importance can be attached to these characters.

116. *STILBOPSAR STUHLMANNI*.

Stilbopsar stuhlmanni Reichen. Orn. MB. i. p. 31 (1893) ; Shelley, B. Africa, i. p. 45 (1896).

Pæoptera greyi Jackson, Bull. Brit. Orn. Club, viii. p. 50 (1899) ; id. Ibis, 1899, p. 592.

a. ♀ ad. Mount Elgon, 7000 feet.

During my recent visit to Berlin I examined the type of *Stilbopsar stuhlmanni*, which is certainly the same as *Pæoptera greyi* Jackson and must stand under the former name.

Stilbopsar kenricki still seems to me to be distinct (cf. Sharpe, Ibis, 1899, p. 593).

117. *SPREO SUPERBUS*.

Spreo superbus (Rüpp.) ; Sharpe, Cat. B. Brit. Mus. xiii. p. 189 (1890) ; Jackson, Ibis, 1899, p. 595 ; Hartert, App. Afr. Sun, p. 342 ; Neum. J. f. O. 1900, p. 280.

Nos. 646, 647 ♂, 648 ♀. Lake Baringo, March 1901.

118. *LAMPROTORNIS BREVICAUDA*.

Lamprotornis brevicauda Sharpe ; Jackson, Ibis, 1899, p. 591 ; Neum. J. f. O. 1900, p. 281.

No. 644. ♂. Lake Baringo, March.

119. *HETEROCORAX CAPENSIS*.

Heterocorax capensis (Licht.) ; Sharpe, Ibis, 1891, p. 239 ; Jackson, Ibis, 1899, p. 587.

Nos. 635, 636. ♂ ♀ ad. Lake Baringo, March 22, 1901.

VIII.—On a Collection of Birds from Western Australia.

By ROBERT HALL.

THE collection which is the subject of these notes was formed by the writer between Albany and the Houtman's Abrolhos between Sept. 23rd and Nov. 8th, 1899. In it the species represented number 69, the specimens 156. They are from three types of country—the heavily timbered south-west corner of the district, the flat region beyond, and the Houtman's Abrolhos. Although I did not travel on the south-east of the Stirling Range, I secured a collection of eggs of the birds resident in those parts which indicate the boundary between the moist mountain-district and the lightly timbered sandy lands to the eastward.

The places of special interest to me were the country between Albany and Denmark, some 40 miles west of the former ; Katanning, 100 miles north of the same ; Geraldton, 300 miles above Perth ; and the Houtman's Abrolhos, some 40 miles off Geraldton. In Denmark I did not meet with sufficient success to compensate me for some three days

spent in that vast area, the timber of which seemed to me too heavy for any other purpose with regard to bird-life than to hide its representatives. I was slightly more fortunate at Tor Bay, which is midway between Albany and Denmark, and less heavily wooded. It being more or less rainy in that district for eight months of the year, the birds partial to a damp atmosphere congregate there. After leaving Albany for Katanning, the wet country changes at Mt. Barker, some fifty miles from the coast, and the Acacia known as the "Raspberry-jam Tree" becomes the prevailing timber. Katanning is the centre of a flat area bearing the "jam" tree, and possessing an occasional supply of water. This is just suited to the Yellow-throated Minah (*Manorhina flavigula*). Some eighteen miles west of Katanning is a creek that attracts a certain number of species throughout the year, and to the east of it is a shallow lake that furnishes a variety of bird-life at certain seasons. Near Perth a naturalist can profitably spend some time, and an outing of three or four miles will take him to something worth seeing. Even in the picturesque suburb of South Perth Banksias are still to be met with and Honey-eaters are numerous. Within a mile of the Zoological Garden a *Haliastur spheurnus* had, I found, built its nest. Geraldton, where I spent a week, is the south-western sea-port of the arid country, and one need only walk along the deep dry bed of a river to find that bird-life is there associated with hot air. The Meliphagidæ are abundant, while the flora is, as elsewhere, magnificent in spring.

The Abrolhos are coral-islands which sea-birds haunt in abundance. A cruise through them will ensure success to the explorer. As these notes will so often refer to specimens collected on the Houtman's Albros, I will give (see Appendix), along with some nesting-data, a list of the birds found there. Two such have been previously published—one, in 1890, by Mr. A. J. Campbell, and a second, in 1898, by Mr. R. Helms*. The latter list included all the species given in the former with two additions (*Anthus australis* and

* 'Producer's Gazette of Western Australia,' v. p. 6.

Limosa uropygialis), making a total of thirty-nine in all. To this list I can now add nine species—four (*Cinclorhamphus rufescens*, *Halcyon sanctus*, *Petræca goodenovii*, and *Phaps elegans*) of which I myself collected specimens; three (*Heteractitis brevipes*, *Glottis nebularius*, and *Squatarola helvetica*) which were obtained through the Director of the Perth Museum; and two more (*Chenopsis atrata* and *Eudypsula minor*) guaranteed by other authorities. This makes a total of forty-eight species now known from these islands.

I did not meet with the Pipit previously mentioned, but, on the other hand, a Lark (*Cinclorhamphus rufescens*) is now recorded, I believe for the first time, for these islands. It is, moreover, of interest from a geographical point to know that *Heteractitis brevipes* is found in Western Australia. Both *Chenopsis* and *Eudypsula* are rare visitors to the islands.

The numerals given in the list correspond with those used in the 'Key to the Birds of Australia,' and additional nesting-data are supplied from the author's own observations as well as from original information supplied by Mr. O. Lipfert, an Assistant in the Perth Museum, and obtained during a tour to the Abrolhos in 1894.

My thanks are due to the Hon. George Throssell, late Minister of Lands (now Premier) for full permission to collect specimens in the State, to Messrs. Broadhurst, McNeil & Co. for placing a cutter-yacht at my service at the Abrolhos, and to Mr. Justice Pennefather for making special travelling arrangements for me.

1. ACCIPITER CIRRHOCEPHALUS. Sparrow-Hawk. (Hall's Key, p. 4.)

One ad. ♂ and one ad. ♀ were obtained. 18.10.99. Geraldton.

I find that the male of this species takes a share in the incubation of the eggs. I note, however, that the tail-feathers of the hen are much more worn. Neither of the parents were timid as we approached along the dry bed of the deep-banked river-course and ascended a tall acacia to see into the nest some twenty-five feet above the sand below.

It was built of dead twigs of the above tree, but was lined with green leaves of the Eucalypt near it. For comparison, the dimensions were: breadth 16 inches, internal diameter 7 inches, depth of bowl about 1·5 inches, depth of the whole solid tapering mass 5 inches; ledges of nest narrow. There were two fresh eggs. 13.10.90. Geraldton.

2. PANDION LEUCOCEPHALUS. Osprey. (Hall's Key, p. 5.)

A. Nestling. Pelsart Group, Houtman's Abrolhos. 17.10.99.

B. Nestling. Easter Group, Houtman's Abrolhos. 22.10.99.

No descriptions have been published, to the best of my knowledge, of the nestling of this species, and that given for *P. haliaëtus* in the British Museum Catalogue does not agree with either of these specimens. In stage A the outer toe was not reversible, giving the bird the appearance of three toes in front and one behind. In B the outer toe was reversible.

A. *Nestling* (about 7 days old).—Downy, save for imperfect feathers upon the head, neck, lower fore-neck, both sides of the median line of the mantle, tail, inner edge of each wing, and region above the humerus. Except as regards the head and hind-neck these are feeble. The feathers of this stage would be replaced by quite another series before the young left the nest. The plumage upon the head and hind-neck is rufous buff, and upon the cheeks light rufous buff; between the crown and cheeks, immediately behind the eyes, is a conspicuous broad oblong line of black; the chin, throat, and the greater part of the lower fore-neck are sooty brown, with rufous feathers appearing below the chin; the chest is sooty brown, between which and the throat is a broad zigzag line of black feathers that are just bursting, among which are a few of a like nature that are rufous; the breast is ruddy greyish white; the abdomen sooty brown, with a circular featherless area half an inch in diameter; while parts of the flanks are greyish white. The dorsal surface is

sooty brown, medially divided by a line of whitish down (spinal tract down) from below the upper neck to the tail; the upper leg is sooty brown, regularly spotted with white; the tarsus and toes are covered with a soft yellow skin composed of reticulated hexagonal scales; the bill is horn-black, the lower mandible is tipped with yellow; the nails are black; the iris is hazel. Length 12 inches.

B. Nestling (strongly feathered; about to leave nest).—Feathers of the head and neck all round light rufous, more so on the lower than on the upper part, each feather streaked along the middle with black and bounded laterally with white; the rufous is conspicuous on the lower fore-neck and less so on the nape, which is streaked; chin and throat whitish, tinged only with rufous and narrowly marked down each centre with brownish black; behind the eye a line of black feathers; no broad line of white running down the side of the neck; a broad band of light brown down upon the chest, with only two or three feathers; breast, abdomen, and under tail-coverts white, slightly tinged in the median part with light yellowish buff; interscapulium and back deep brown, each feather broadly edged with buff; outer wing-quills black, tipped with pale rufous; inner quills chocolate-brown, edged with pale rufous like the majority of the upper tail-coverts, which are chocolate-brown broadly edged with buff; under tail-coverts deep brown edged with rufous buff; tail-feathers, only partially “burst,” blackish brown and ashy brown alternately barring the tail, tips pale rufous; legs partly clothed with down and white feathers; tarsus and foot with loose tawny skin in a complete fold; talons and bill horn-black. Total length 22·5 inches, wing 12, tail 6·5, tarsus about 2·1.

Each islet has its pair of Ospreys with a nest upon the high land above the beach, which rarely exceeds five feet in altitude. This year the eggs were laid early in October, and I only succeeded in finding eggs on the 17th and 26th of that month. Many nests contained two young birds each, while one had a nestling and an addled egg. They were made of a mass of coral, shells, sticks, and seaweeds, while

a large salt-bush was easily hidden by the structure for which it formed a basis. Many of the nests were not more than three feet high, but others were much larger, and all were upon the ground. Mr. Gilbert spoke of a wonderful structure upon Rotnest Island being fifteen feet in circumference. One of those I found measured at the base twenty feet six inches, the top being only two feet from the ground, and being forty inches across, with a depression for the young of three inches. Living *Salsolaceæ* were growing upon three sides. Another nest upon an islet south-east of East Wallabi Island of the Abrolhos may be described as five feet six inches high, seven feet at the base, three feet six inches across the top, with a depression of about four inches; it was cone-shaped with the apex sliced off, and was composed of salt-bush branches regularly heaped up, having dead pieces of coral and sponges interspersed. The nest had salt-bush growing up one side. Within it were marine weeds, sponges, and a few pieces of green plants. The whole structure was practically a small stack of wood cylindrically placed on end in the middle of a few acres of dead coral, of which the island is almost entirely composed.

The Osprey is referred to by Professor Newton* as a daring bird, and one that, if possible, severely handles the collector of its eggs or young. On that part of our coast washed by the Indian Ocean the birds do not appear to attack an intruder, and all that attracted my attention when handling the young was their plaintive cry high above the nest.

3. *STREPERA PLUMBEA*. Leaden Crow-Shrike. (Hall's Key, p. 8.)

Sk. ad. ♂. 3.10.99. Denmark River.

The only specimen secured helps to support the view that *S. plumbea* is a subspecies of *S. cuneicaudata*. For two hundred miles northward this bird is commonly known as "the squeaker." Young were in the nest on October 25th.

* 'Dictionary of Birds,' p. 661 (1896).

4. GRALLINA PICATA. Magpie-Lark. (Hall's Key, p. 10.)

Sk. ad. and juv. 5.10.99. Katanning.

One notices the fact that in western birds there is a lack of vivacity and a want of melody in the voice. The eastern and western representatives of this species shew a remarkable difference in this respect, for, while one pipes pleasantly, the other gives forth a broken and unpleasant series of jarring notes. The call is harsh and creaky, and so continuous as to resemble grinding. In the Denmark River and Albany districts I did not meet with a specimen, so that my first impressions were formed at Katanning, where young birds were essaying their first flights in a tree in the town.

5. COLLYRIOCINCLA RUFIVENTRIS. Rufous-bellied Shrike-Thrush. (Hall's Key, p. 11.)

Sk. ad. ♀. 28.9.99. Tor Bay, Albany.

I met with this species breeding freely at Geraldton. Five clutches of eggs that I found varied in a similar way to those of *C. harmonica*.

Like that eastern bird, it prefers to have the nest as well hidden as possible, and chooses a twiner (*Cuscuta*) where it can. I found the whole depth of a nest to be 3.75 inches and that of the bowl 2.25 inches; diameter 5.5 inches × 4 inches, making the structure ovate. One such had been used for two seasons, and was formed of *Melaleuca* bark, the lining being composed of rootlets of a wiry nature.

6. GRAUCALUS MENTALIS. Little Cuckoo-Shrike. (Hall's Key, p. 12.)

Imm. sk. ♀. 30.9.99. Tor Bay, Albany.

Near the mouth of the Denmark River I noticed several individuals of what appeared to be this species on the wing.

This skin agrees with the description in the key supplied for the species by Dr. Sharpe, but I quite believe that a good series of skins would allow of fuller keys with which to work. There is so wide a range of measurements between *G. melanops*, *G. parvirostris*, *G. hypoleucus*, and *G. mentalis* that the identification of a specimen is most

difficult. The species under review is, I believe, new to Western Australia.

7. *LALAGE TRICOLOR*. White-shouldered Caterpillar-eater. (Hall's Key, p. 12.)

A, B. ♂ ad. sks. 27.10.99. Geraldton.

C. ♂ semi-ad. sk. 6.10.99. Katanning.

These three skins are intensely black or metallic green-black, according to the light. They are much more black and lustrous than eastern skins in my cabinet, one of which is dated (in the breeding-season) 5.10.98, and another 5.3.99. The plumage is most likely a matter of age, and the first-named bird had probably moulted early or had only experienced the autumn moult.

Specimen C.—This clearly indicates a transitional stage; because the right half of the rectrices (except one, which is new) are brown, the innermost secondaries (two on the left and three on the right wing) being also brown, and the wing-coverts having their edges marked with light brown. The basal portion of the under mandible has the brown indicative of youth.

Change of plumage.—Points of interest are presented to us not only by specimen C itself, which is just concluding a heavy moult of quills and contour-feathers, but by the fact of finding in the same specimen the white of the secondaries rapidly commencing the moult by "tuck pointing." This specimen, I should say, is not proceeding normally. In A and B the white of the secondaries is fast disappearing by the same process, for whereas a broad band of white (0·7 inch) exhibits itself along a part of the outer web, a ragged and short band shews along another part of it. This applies to many secondaries, and probably commences while the birds are nesting, because I saw no young birds fledged, but found nests of young and collected male birds on the same ground.

I presume that, having served their purpose of adornment in A and B, if not C, such feathers are the first, by this special form of moult, to change.

Specimen C is moulting its quills in early October instead

of in autumn, as may be seen by my specimens. In the above-given observations it is shown that this species has two methods of changing its plumage.

8. *MICRÆCA ASSIMILIS*. Lesser Brown Flycatcher. (Hall's Key, p. 13.)

There is little of interest in the skin obtained at Katanning, except that the under surface, save for the tail-coverts and throat, is brown; the coverts are white, while the throat is a dull white. This probably indicates a stage between the nestling and adult. Wing 3.45 inches.

9. *PETRÆCA CAMPBELLI*. Western Scarlet-breasted Robin. (Hall's Key, p. 13.)

A-F. Sk. ad. ♂ s. Sept. to Oct. 1899. Denmark River; Tor Bay; Katanning.

G. Sk. ad. ♀ .	29.9.99.	} Tor Bay, Albany.
H. Fledgling.	28.9.99.	
J-K. Young.	30.9.99.	

M-N. Imm. ♂ s. Sept. 29th, Tor Bay; Oct. 5th, Katanning.

O-P. Imm. ♀ s. Sept. 27th, Tor Bay; Oct. 5th, Katanning.

The first notice of this species, as such, is to be found in 'The Ibis' (1899, p. 303), but it is very brief and refers only to the male. Up to the moment of writing no description has appeared, in this colony, of the female. As, however, Mr. Campbell has sent an account of both sexes to Dr. Sharpe, no doubt it will soon follow, and I am able to devote my attention to the several stages marked above which deal with immature examples. I was specially pleased to find between fifteen and twenty individuals of this species in the hill-country of Western Australia, and each time to note the large black cap and small white forehead, that convinced me of its being distinct from the eastern *P. leggii*. Like our Robin it does not confine itself to forest-land only, but is to be found in lightly timbered country. Eggs were collected last season in the Stirling Range, one of which was given to me during my visit, and at the moment of writing this still

remains one of the few Australian birds' eggs not yet described in scientific literature. The clutch is composed of three eggs, one being deposited each successive day. A nest found at Katanning was built with three walls: (a) external, bark; (b) thin middle, grass-stems and horsehair; (c) internal layer, animals' brownish-red hair. Slightly oval in shape, its greatest diameters were 3 inches \times 2.5 inches; the bowl-diameter was half an inch less, while its depth was 1.5 inch; the depth of the whole structure (which tapered to accommodate itself to the fork, 7 feet above the ground, in a Casuarina) was 3 inches. A much more beautiful and broader nest is exhibited in the Perth Museum.

Specimen H.—Upper surface brown, each feather streaked with white along the mid-rib; lores and base of forehead shewing white; throat a mixture of brown and whitish; chest deep brown; abdomen white; under tail-coverts pale chestnut; all the white on the wing-quills of the adult represented by rufous; under surface of wing with a white line across the basal part of the quills; outer tail-feather as in adult, except for the measurements; each tail-feather with the rachis extended so as to appear spinose; bill and feet lemon-coloured; nails black; soft ring round eye pale yellow; eyes black. Total length 3.4 inches, wing 2.2.

Specimen J.—This appears to have left the nest only a few days before being killed, and is similar to H, but has larger measurements, while the bill is not so yellow. Total length 4 inches, wing 2.3.

Specimen K.—This is very little older than H or J. The upper mandible is maturing into black, and the rufous of the wings is becoming white; there is more white on the forehead than in H or J, and it is now becoming a definite frontal mark; feet below rich orange, above light orange. Total length 4.55 inches, wing 2.75.

Specimen M.—A great change is now being effected in the plumage. No red appears in H, J, K, but here we have an outburst of not only "reds," but "blacks" and "whites," a large proportion of the streaked feathers of all stages being still retained in the dorsal region.

The white frontal mark has enlarged to the size normally found in the adult, but the texture of each feather is soft, and there is no superimposed layer of cells to give a glint. The wings still retain some light rufous marks in place of the white shown by the adult, while white is present in the primaries and secondaries. Black feathers are mixed with the brown on the head, throat, interscapulum, rump, and lesser wing-coverts; the red of the chest is pronounced in one spot, but sparse below and on the left of it. Bill black above, pale yellow at base of lower mandible; feet blackish; soft skin round eye yellow. Total length 4·9 inches, wing 2·75.

Specimen N.—Similar to M, but has a broader and deeper patch of red, which is lighter than in the adult; more black feathers on the throat and back; a darker bill; and more white shewing on the small brown edges of the wing-coverts, that form so fine an appearance of clear white in the mature bird.

Specimens O and P.—These are skins of females further advanced towards the adult stage than are M and N in the male. There is no sign of immaturity on the backs, and the red of the breasts is broadly though feebly distributed. The throat-plumage varies, being brown in O, whitish in P, but in neither grey as in the adult. The lower mandible and frontal marks serve to prove the specimens nearly mature. The white band on the wing-coverts is stronger in O than in the adult. Total length 5 inches, wing 2·7.

Just as the green on the wings and tail of certain Meliphagidæ is pronounced in the fledgling and weak in the adult, so it is with this Robin as regards the rufous upon the upper surface of the wings and upon the under tail-coverts. Rufous is clearly shown in the nestling, but disappears gradually through the various stages, until the white of the adult appears (within ten weeks).

The tail-feathers are practically pointed in the nestling—the spinose appearance vanishing gradually in all the stages above noted until the rounded form of the rectrices of the adult is reached.

Stages H, J, K, M, and N are clear steps in the "ladder" of development to the mature form.

10. *PETRÆCA GOODENOVII*. Red-capped Robin. (Hall's Key, p. 13.)

Young sk. Long Island, Pelsart Group, Houtman's Abrolhos. 27.10.99.

This species is generally mentioned as met with singly or in pairs. I saw only one specimen upon the whole group, the species being now recorded from the Abrolhos for the first time. The struggle of so young a bird to reach an island forty miles from the mainland must have been great. No assistance to do so would, most likely, be given to it beyond the strong off-shore wind with which it started. An island-life did not seem to have affected its short course of continental manners, for it flew from stone to stone instead of from branch to branch, keeping to the beach and behaving just as a Robin does.

The bird was so young that the fledgling feathers still remained in places, and the forehead bore no trace of a red flush; commissure yellow; length of wing 2.4 inches.

11. *PETRÆCA BICOLOR*. Hooded Robin. (Hall's Key, p. 14.)

A. Sk. ad. ♂.	7.10.99.	} Katanning.
B-C. Sks. ad. ♀ s.	5.10.99.	
D. ♂. Moulting.	6.10.99.	
E. Young.	5.10.99.	
F. Young.	6.10.99.	Nannine, Cue.

Specimen D.—This bird is in a tricolor state—white, brown, and black. It does not show the streaked brown or white of the young, nor the black of the adult (there is a uniform brown phase that seems to indicate a stage between them). All the upper surface is brown and black intermixed, the browns eventually giving way to the blacks. On the interscapulium and back is a small patch of black feathers with merely a few that are brown; the throat is jet-black; the cheeks shew a mixture of black and brown; the breast and abdomen are white; the scapulars not a clear white; the wings and tail are marked with white as in the adult; the

wings, their coverts, and the tail are uniform brown ; the bill and feet black.

Specimens E and F.—Both about the same age and just out of the nest in localities three hundred miles apart. The characteristic white marks upon the wings and tail that distinguish this species are clearly shown. The greater part of each contour-feather and wing-covert is marked longitudinally with white in E and light rufous brown in F ; the breast is blotched with white upon black and partly upon brown in F, while light rufous takes the place of white in E. The birds thus present a much streaked and blotched appearance. E has a black iris, the upper and lower surfaces of the bill blackish with the lateral parts dull yellowish. It is noticeable as regards F (kindly furnished by Mr. L. D. Cameron) that the main white parts of the wings and tail in the adult are also white in this skin, but all the other parts, such as the edging to the quills and scapulars, which should be white, are light rufous brown.

I observe, in the limited number of skins at my disposal, that, of the male birds collected in Victoria during September and in West Australia during October, the former are much blacker and have reflecting surfaces.

In the development of the male of this species there are three stages of plumage that are quite dissimilar :—1. The streaked phase ; 2. The greyish-brown and white ; 3. The deep black and white*.

12. PSEUDOGERYGONE CULICIVORA. Western Fly-eater. (Hall's Key, p. 14.)

One adult skin obtained 27.9.99. Denmark River.

High up in the tall Karri-timber you may expect to find

* Since writing these notes, I find that my collection furnishes the intermediate stage required. Locality Kewell, Vic. ♂ juv. (skin), Oct. 1896, obtained by Mr. Joseph A. Hill. All the upper surface is brownish grey, except for a few black feathers coming on the interscapulum and upper tail-coverts, which indicate a moult for the next stage ; throat and chest brownish ; rest of under surface white ; tail-feathers brown. It is noticeable that while the younger stages E and F exhibit black tails similar to those of the adult, this phase and the more developed specimen D have tails that are for the most part brown.

this tiny bird. In order to see it for the first time you must trace it by the "see-saw" music, and the most pleasing voice in the western bush, which should not be compared with that of a *Malurus*, for there is no vivacity in it and not much energy is expended. Rather does it tend towards a lullaby. To hear it aloft among the branches for the first time and to trace it to one of the smallest of our birds, say 200 feet above, is a special delight to a naturalist.

13. *MALURUS ELEGANS*. Red-winged Wren. (Hall's Key, p. 16.).

A & B. Ad. ♂ s. } 27.9.99. Denmark River.
C. Ad. ♀. }

The feathers of the back appear as if in two layers, an upper silvery blue and an under silvery white, both intermingling to give the silvery appearance. The blue feathers are visible for nearly three quarters of an inch.

14. *MALURUS LAMBERTI*. Lambert's Wren. (Hall's Key, p. 16.)

A, B, C, D. Ad. ♂ s. 15th to 29th Oct., 1899. Geraldton.

This species was fairly plentiful on the scrub-covered sand-hills of the beach at Geraldton, and the discovery of a nest with three unfledged young (28.10.99) warned me that it was breeding-time. The nest was constructed in much the same manner as that of *M. cyaneus*, and was placed in a *Melaleuca* not above twelve inches from the ground.

Since my return, I have been informed from Geraldton that the males have moulted and become like the females in plumage.

15. *RHIPIDURA ALBISCAPA*. White-shafted Fan-tail. (Hall's Key, p. 17.)

A. Ad. Tor Bay, Albany. 30.9.99.

B. Ad. Katanning. 6.10.99.

I here record this species as found in Western Australia, and venture to do so because I cannot recognise in these skins *R. preissi* of Cabanis, the difference, if any, between that and *R. albiscapa* appearing to me to be of the

slightest. Skin A is as like a Victorian skin dated 17.7.96 (1-2 years old) as those of any two birds from localities so far apart can be*. This induces me to consider the western species as identical with the eastern, and in support of my view I may adduce the following points :—

Dr. Sharpe, in the Brit. Mus. Cat., has left the question open, because the key given for *R. preissi* is in the main the same as that for *R. pelzelni* of Norfolk Island. Mr. Gould called the former a species on the authority of Dr. Cabanis; and Dr. Sharpe, I believe, had a bird in the Museum (Gray's Hand-list, p. 331, 1869) which did not convince him that the species was valid, although he did not make a synonym of the name on account of the doubt attaching to it.

Eggs found last season south-east of the Stirling Range may be described as resembling those of the eastern form.

16. *SISURA INQUIETA*. Restless Flycatcher. (Hall's Key, p. 19.)

An adult skin secured upon the banks of the Denmark River (2.10.99) has its chest pure white and the primaries blue-black, in keeping with the secondaries.

17. *ACANTHIZA INORNATA*. Plain-coloured Tit. (Hall's Key, p. 25.)

Two adult specimens were secured between Albany and the Denmark River on the 5th and 7th of November.

18. *ACANTHIZA APICALIS*. Broad-tailed Tit. (Hall's Key, p. 25.)

A. Ad. ♀. }
B. Ad. ♂. } Denmark. 3.11.99.

C. Ad. }
D. Ad. } Tor Bay, Albany. 30.9.99.

* While age intensifies the black of the collar beneath the throat, it also makes the contrast clearer between this collar and the tawny chest of the perfectly mature eastern bird. As to the West-Australian bird having more white on the terminal half of the tail, I can only say that its tail must be nearly all white if it has more of that colour than is shown in one of my skins (3.8.96, Victoria). I consider this difference as merely a matter of age, and that Gould's record needs his specimens to support it (see his 'Handbook,' i. p. 246).

The tendency of the subterminal black band in this species is to be as strongly marked on the outer web as on the inner; while in *A. pusilla*, which bears a strong likeness to it, the tendency is for the inner web alone to be banded with black. The inner web of each rectrix is more or less tipped with white in the males and females of this form.

Along the partially cleared river-tracts, due to the work of saw-millers, this little bird is always obtainable during the aforesaid months of the year. From one nest I extracted a young Cuckoo (*Cuculus flabelliformis*), almost fledged, and a pathetic lamentation was set up by the foster-parents. Taking the nest from among the Melaleuca branches, I placed it at the base of the tree, when the little Tits approached very closely and became quite excited. A and B indicate these birds, while the "parasite" is elsewhere referred to.

19. ACANTHIZA CHRYSORRHOA. Yellow-rumped Tit. (Hall's Key, p. 25.)

Two adult skins obtained on September 27th and 28th, twenty miles apart (Denmark and Tor Bay), have a deeper coloured plumage than my eastern skins, and also a portion of the barb of each feather of the occiput striped with black. A comparison with more specimens is necessary to decide the value of the observations. At Katanning (5.10.99) I observed a rather peculiar nest. It had two entrances to the lower chamber near each other. The unroofed apartment above was higher than usual. In a proteaceous tree close by were the remains of last year's nest built upon the same principle. I secured fresh eggs near Albany on Sept. 29th, at Katanning on Oct. 5th, and at Geraldton on Oct. 28th.

20. SERICORNIS MACULATA. Spotted Scrub-Wren. (Hall's Key, p. 26.)

A. Advanced nestling. 13.10.99. Geraldton.

B, C. Juv. sks. 6.10.99. Katanning.

D. Sk. ad. ♂. }
E. Sk. ad. ♀. } 13.10.99. Geraldton.

F. Sk. ad. 18.10.99. Houtman's Abrolhos (East Wallabi Island).

The bird marked "advanced nestling" had left the nest and was being fed by the parents.

On the West Wallabi Island of the Abrolhos I observed an empty nest of this species. Broken shells indicated that the young had flown. Feathers within and grass without composed the nest, which was built upon the basal part of that of last year.

21. *POMATORHINUS SUPERCILIOSUS*. White-browed Babbler. (Hall's Key, p. 29.)

Sk. ad. ♂. 3.11.99. Denmark River, 10 miles from the ocean.

I was surprised to meet with a flock of half a dozen of these birds some six miles up the river from the town, living a secluded though noisy life amongst the scrub-vegetation of a giant Karri-forest. I was hunting for *Atrichia* at the time, and this will give an idea of the style of country.

22. *CINCLORHAMPHUS RUFESCENS*. Rufous Song-Lark. (Hall's Key, p. 29.)

Sk. ♂ juv. 27.10.99. Long Island, Pelsart Group, Houtman's Abrolhos.

Whole of the upper surface tawny, heavily streaked with deep brown; upper tail-coverts decidedly rufous. Under surface: throat lightly, chest heavily streaked; under tail-coverts tawny, abdomen slightly so; lower mandible pale flesh-brown. Length of wing 3.5 inches.

This species had not been previously recorded as found upon the Abrolhos. Two other specimens were observed in the mangroves of the same island.

23. *EPHTHIANURA ALBIFRONS*. White-fronted Chat. (Hall's Key, p. 30.)

Some three to four miles from Geraldton I observed a small flock, and secured a bird for identification.

24. *SPHENOSTOMA CRISTATUM*. Wedge-bill. (Hall's Key, p. 31.)

Sk. ad. ♂. 16.10.99. Geraldton.

This species is undoubtedly shy, as noted by naturalists in general. It prefers to post itself upon a dead tree just higher than the adjacent short vegetation, and there, always upon the alert, it is ready at once to drop down out of sight and to reappear later in the distance. The rendering I should give of the call is "Kit-e-lin-tof" when distant, and "Kit-e-liut-e-tof" when near. The Geraldton boys know it as the former, and pronounce the name in a sweet swinging style.

25. *GYMNORHINA DORSALIS*. Long-billed Crow-Shrike.
(Hall's Key, p. 31.)

A. Sk. ad. ♂.	6.10.99.	} Katanning.
B. Sk. imm. ♂.	5.10.99.	
C. Juv. ♂.	4.10.99.	

In the Perth Museum I was shown by Mr. Woodward six skins of birds, three being young fledglings and three older fledglings. All shewed black backs, the bulk of the feathers being edged with light brown.

Three of these birds were the result of a white-backed male mating with a black-backed female, and had each back-feather edged with brownish white. The fledgling marked C was much whiter upon the back.

At Albany I observed an individual in captivity that was about eleven months old. It had the eyebrows fawn-coloured; the scapulars and back-feathers brown, partly edged with white, but mostly with lighter brown.

From other fledglings which I saw it was evident that the species may pass through two phases before leaving the nest: (a) the dark variety mentioned from the Perth Museum, which shews a sombre neck and rump (indicating the female sex), and (b) that with the neck and rump white, and a whitish back, each feather being broadly marked subterminally with black. There are two or three feathers on the back that agree with the skins under (A). Male birds are referred to in (A) and (B).

This bird lacks the harmonious voice of its fellow species. It crows like a domestic fowl, and that is not very pleasant in a "Pie." I know of a "Pie" in captivity in

Victoria that crows just as the wild western bird does. Fresh eggs were observed at Geraldton on Oct. 13th ; and the nest, which was compactly built, was placed at the top of a *Banksia* some ten feet from the ground. It was mainly formed of light-coloured rootlets with a few heavier sticks to form a binding base. The internal layer was made up of threads from gunny-bags, collected in an adjacent wheat-field. A band of black horsehair encircled the lower part of the cavity of the nest, which was 13 inches broad, with its bowl-diameter 6 inches, and depth 3 inches. The whole depth of the nest was about 9 inches. The three eggs were of the chestnut type so often seen in Victoria.

26. *OREŒCA CRISTATA*. Bell-bird. (Hall's Key, p. 32.)

I obtained an adult at Katanning on Oct. 4th. Although I spent three days there, I did not hear any note that would correspond to the vernacular name.

27. *EOPSALTRIA GEORGIANA*. Grey-breasted Shrike-Robin. (Hall's Key, p. 33.)

A, B. Fledgling sks. 28th and 30th Sept. Tor Bay, Albany.

C, D. Imm. sks. 29.10.99. Geraldton.

E, F. Ad. sks. 26th and 28th Sept. Tor Bay, Albany.

Just as the eastern representative (*E. australis*) goes rapidly through a series of three changes and more leisurely enters a fourth (adult), so does this form. The young as they leave their nests appear, at first sight, brown, much streaked with white (A and B) ; then, judging by analogy, they quickly get a touch of olive-yellow, next get more yellow while the plumage is becoming greyer (C and D), and finally (next season) don the lighter yellow (E and F).

28. *PACHYCEPHALA OCCIDENTALIS*. Western Thick-head. (Hall's Key, p. 33)

Skins of males were procured at Tor Bay and Katanning in the first week of October, and of females at Denmark and Tor Bay within a day or two of the same time.

I found the nest and eggs of one of the Katanning birds on Oct. 6th in a belt of *Melaleuca* alongside of the expanding

part of a creek. I could imagine quite easily that I was examining into the life-history of the eastern representative, *P. gutturalis*.

29. *CLIMACTERIS RUFÆ*. Rufous Tree-creeper. (Hall's Key, p. 35.)

A. Ad. sk. } 4.10.99. Katanning.
B. Young. }

The young bird was perched upon a log and was being fed by its parents.

Specimen B.—The dorsal surface differs from that of the adult in having the forehead and crown slate-coloured, and the lores of a similar colour with a very faint indication of chestnut; the upper tail-coverts rufous, with a wash of the same over the tail; the tail itself clearly edged with rufous. The whole under surface is like that of the adult, except the throat, which is brown washed with rufous, and the chest, which is uniform and not striped; feathers of flanks without pale tips. Bill 0.45 inch.

Amongst the tall dead timber of Tor Bay, Albany, I could see the parents taking food to their young (2.10.99).

30. *SITTELLA PILEATA*. Black-capped Tree-runner. (Hall's Key, p. 36.)

Three adult males and one adult female. 29.9.99. Tor Bay, Albany.

These four birds were seen together engaged in a frolic of some kind, and one discharge with a "half" cartridge secured them all. At Katanning, on Oct. 5th, I observed in a high dilapidated tree (that I would not trust with any additional weight) a nest of fledged young. This is a sociable bird and full of chatter.

31. *MYZOMELA NIGRA*. Black Honey-eater. (Hall's Key, p. 37.)

Two adults. 14.10.99. Geraldton.

One has the breast-marking brown; the other is black upon the breast. The few specimens of this species seen were always upon the sand-plains, which were thickly adorned with a brightly coloured covering at this time

of year, the bushes being from two to four feet high. The call of the bird is weird, and is very similar to that of *Megalurus gramineus*.

32. *ACANTHORHYNCHUS SUPERCILIOSUS*. White-browed Spine-bill. (Hall's Key, p. 37.)

- | | | | |
|---------------|----------|----------|--------------------|
| A. Ad. ♂. | 2.10.99. | Denmark. | |
| B. Imm. ♀. | 26.9.99. | | |
| C. Young. | 28.9.99. | | } Tor Bay, Albany. |
| D. Fledgling. | 28.9.99. | | |

The principal fact of interest that I have to report concerning this bird is that I found several incubating females which shewed a plumage far from mature.

The architecture of two of the nests, though less splendid, resembled that of the eastern Yellow-breasted Shrike-Robin (*Eopsaltria australis*). Being placed between branching twigs and not pendent, the style was far from the normal. The structure, though symmetrical, was coarse, and the edge of the bowl was wide; it was deeper than broad and was lined with feathers. All the nests were cup-shaped. One measured: whole diameter 2·5 inches, whole depth 2, depth of bowl 1·5. While this particular fabric was placed some six feet from the ground in a *Banksia*, two others were quite eighteen feet from it. In one nest was a single nude young bird and in another an egg on the point of hatching (30.9.99), while in a third found near Albany was a very young nestling. It would seem that, according to my limited observations, the number of eggs is more often one than two.

33. *ZOSTEROPS GOULDI*. Green-backed Silver-eye. (Hall's Key, p. 38.)

- | | | |
|------------|--------------------------|-----------|
| A. Ad. sk. | Tor Bay, Albany. | 29.9.99. |
| B. Ad. sk. | Geraldton. | 13.10.99. |
| C. Ad. sk. | Wallabi Group, Abrolhos. | 20.10.99. |
| D. Young. | Geraldton. | 13.10.99. |

The sides of the body in all the above skins are only a shade more ashen than the breast.

Young. Specimen D.—Although having just left the nest

and being fed by a parent when I saw it, in the early stage of plumage this individual bore a strong likeness to that of the adult. The throat was faintly marked with yellow and the under tail-coverts more strongly but not so distinctly as in the older bird. Both throat and coverts would have the yellow intensified at the next change of plumage.

I very frequently met with this species, and was pleasantly surprised to receive a favourable report of it from the owner of an isolated garden upon the Denmark River. This garden contained an acre under fruit, while for twenty miles round there was not so much as a single introduced tree; yet aphides were at work, and the Silver-eye is now secure in the affection of the owners on account of the good deed it performs in ridding the orchard of the scourge. At Geraldton a young collector told me that this species is very sensitive, for if you touch the eggs it will throw them out of the nest and rebuild it elsewhere with the same materials. It is quite as sensitive as *Menura victoriæ* and *Anas superciliosa*. In a low myrtaceous shrub, thickly enveloped by a twining "native hop," my young friend, Mr. Douglas Darling, found a nest made principally of Clematis fruits and to a less extent of horsehair. Its external diameter was 2.5 inches, internal diameter 1.75, depth of bowl 1.25. There were three eggs on the point of hatching (13.10.99).

On the Houtman's Abrolhos more than a pair could be found upon the larger islands, but I saw only a couple on each of the smaller. For instance, I traversed one, of say twenty acres at the most, covered with stunted shrubs, and could only get a single pair of birds to rise. On another treeless islet off East Wallabi Island, a genuine coral mass of some three-quarters of a mile in length and one hundred yards in width, I saw only one bird. Upon this "hunch," depressed in the centre and containing brackish water, grew some "salt-bush" shrubs, acacia (three feet high), and mesembryanthemum. In the last-named was placed a nest with three fresh eggs (21.10.99) within four inches of the "coral and guano" ground. The nest was

of quite a new description, not only on account of its seaweed material and beautiful construction, but also from its unique position in "pig-face" so very near the ground. Silver-eyes and Sericorns seem to be the pioneers of Passerine birds. Except for a stray percher or two, they admit of no rivalry in their monarchy.

[To be continued.]

IX.—Notices of recent Ornithological Publications.

1. '*Annals of Scottish Natural History.*'

[The Annals of Scottish Natural History. No. 39, July 1901, and No. 40, October 1901.]

In recording the occurrence of *Linota rostrata* (Coues) from Barra, Outer Hebrides, Mr. W. Eagle Clarke justly observes that "a knowledge of the various races of the Arctic or Mealy Redpolls inhabiting the Old and the New Worlds is desirable for the more precise study of the British birds of the group"; but some of us may think that "this way madness lies" before such knowledge is attained. Mr. George Sim's announcement of the capture of a Black Kite (*Milvus migrans*) near Aberdeen on April 16th last is of considerable interest, for this is only the second record for Great Britain of a species which is emphatically migratory and nests annually at no greater distance from us than the banks of the Mosel; so that instances of its more frequent occurrence might be reasonably expected. Moreover there is not much chance of a large raptorial bird escaping observation—not to say destruction—in these days. Mr. T. G. Laidlaw concludes his Report on the movements and occurrences of birds in Scotland during 1900; and from this, as well as from some minor notices for 1901, it is evident that the Great Spotted Woodpecker (*Dryocopus major*) is decidedly increasing as regards frequency of breeding in the south of Scotland. Mr. Sturrock states that in the south of Shetland, in 1901, he captured a Redstart (*Ruticilla phæniceus*) in the act of building a

nest, and that he also found many nests of the Willow-Wren (*Phylloscopus trochilus*), both new breeders for Shetland. Mr. James McL. Marshall follows with some notes made between April and July in the vicinity of St. Mary's Loch, Selkirkshire; and, from a significant omission, we gather that "on still St. Mary's lake" the Swan no longer "floats double, swan and shadow." Some evidence of the nesting of the Lesser Whitethroat (*Sylvia curruca*) in West Ross-shire deserves mention.—H. S.

2. *Aplin on the Birds of Carnarvonshire.*

[Further Notes from Lleyn, West Carnarvonshire. By O. V. Aplin, F.L.S. Zoologist, 1901, pp. 141-150.]

In this, as well as in a previous paper published in the same periodical (Zool. 1900, p. 489), Mr. Aplin has given a pleasing account of his rambles over the western parts of Carnarvonshire, and of his adventures in search of the birds of that district. Bardsey Island, where the Manx Shearwater appears still to breed, was also visited. No special rarity was observed, unless it be the Purple Sandpiper, of which three occurrences were noted during the two visits.

3. *Arrigoni degli Oddi on Birds from Dalmatia.*

[Nota su una Piccola raccolta di Uccelli del Museo di Zagabria provenienti dal Litorale Dalmato. Atti R. Ist. Veneto d. Sci. lx. pp. 575-585.]

Count Arrigoni has carefully compared the specimens in a small collection of birds made for him by Herr Brusina (Director of the National Zoological Museum of Agram) on the Dalmatian littoral with others from various localities in the Palæarctic region, and notes the results. Count Arrigoni seems to be of the opinion that it is not easy to separate *Hypolais icterina* and *H. polyglotta* satisfactorily.

4. 'The Auk.'

[The Auk. A Quarterly Journal of Ornithology. Vol. xviii. Nos. 3 and 4, July and October 1901.]

Passing over some papers of purely American interest,

Mr. Ruthven Deane's contribution of the unpublished letters of William Macgillivray to Audubon deserves attention on this side of the Atlantic. Messrs. Bangs and Bradlee give a list of the birds of Bermuda, and describe three island forms which they consider to be worthy of full specific distinction. As an outlier, Bermuda has been visited by several wanderers from the Old World, and long ago Col. H. W. Feilden recorded the Lapwing there, but now *Vanellus vulgaris* has travelled still further to the south-west and has been obtained near Nassau, Bahamas. In Mr. A. C. Bent's first instalment of a paper, with photogravures, on the nesting-habits of the Anatidæ in North Dakota, all the species mentioned are on the British list. Mr. Outram Bangs gives a list of birds obtained in the vicinity of Chiriqui, with several new species which may be left to the recorder of "Aves" in our 'Zoological Record.' A paper by H. Lyman Clark on the Classification of Birds, based on pterylosis, deserves the attention of experts; and if the demands on our space would permit we might quote his conclusions (p. 380), but an abstract would hardly do them justice. A valuable paper, by Mr. W. A. Bryan, on Hawaiian birds, will interest all those ornithologists who study geographical distribution and lines of migration. We must not omit to mention that pp. 295-320 contain the Tenth Supplement to the A. O. U. Check-list.—H. S.

5. *Bernacchi on Antarctic Birds.*

[To the South Polar Regions, expedition of 1898-1900. By Louis Bernacchi, F.R.G.S. London: Hurst and Blackett, 1901. Price 12s. net.]

No one interested in Antarctic Research should fail to read Mr. Bernacchi's narrative of his experiences with Borchgrevink's expedition of 1898-1900, which he accompanied as Physicist. The author does not claim to be an ornithologist, but there are necessarily constant references to birds throughout his pages, while several excellent photographs of Penguins and Penguin-life are given. His account of the curious ways and habits of the Antarctic Penguin (*Pygosceles adeliæ*) is the best and most complete that has

yet been published. It appears (p. 225) that ten specimens of the Emperor Penguin (*Aptenodytes forsteri*) were captured alive, but made their escape from the enclosure in which they were confined. We hope that the National Antarctic Expedition will not return without some living examples of this fine bird. Its near ally, *A. patachonica*, does well in captivity.

6. *Bryan's Key to the Birds of the Hawaiian Group.*

[A Key to the Birds of the Hawaiian Group. By William Alanson Bryan. Honolulu, 1901. 4to. Pp. 76.]

The Curator of Ornithology in the Bernice-Pauahi-Bishop Museum furnishes us with a key to the Hawaiian Avifauna, which may be useful to those who are studying the remarkable forms of that group. It begins at the bottom, after the American fashion, and contains diagnoses of 120 species. We cannot say that we admire the 15 photographic plates of dead birds that illustrate the work, though they will doubtless tend to assist in the determination of the species.

We are told, in the Preface, that the Museum in question "now possesses the most representative collection of the Hawaiian Avifauna extant," containing upwards of 600 specimens, amongst which is the famous Mills Collection, and that constant additions are made to it by the Museum's skilled collector, Mr. A. Seale.

We venture to suggest that an octavo Handbook of the whole Hawaiian Avifauna, with references to the two great illustrated works of Wilson and Evans and of Rothschild, would be a desirable undertaking.

7. *Burckhart on Psophia and Rhinocetus.*

[Der Nestling von *Psophia crepitans* und das Jugendkleid von *Rhinocetus jubatus*. Von Rudolf Burckhardt. Nov. Act. K. L.-C. D. Akad. Naturf., Halle, lxxix. No. 1, 1901.]

Prof. Burckhardt describes and figures the nestling of *Psophia* and the plumage of the young of *Rhinocetus*. He notes that the colour of the nestling of *Psophia* has no

likeness to that of the adult bird, being of a reddish brown. The corresponding plumage of *Rhinochetus* is interesting in that it is more elaborate in pattern and varied in colour than that of the adult; it is, indeed, not altogether unlike that of *Eurypyga*.

8. *Finn on the Birds of the Indian Museum.*

[List of the Birds in the Indian Museum. Part I. Families *Corvidæ*, *Paradisæidæ*, *Ptilonorhynchidæ*, and *Crateropodidæ*. By F. Finn, B.A., F.Z.S., Deputy Superintendent of the Indian Museum. 8vo. Calcutta, 1901. Pp. i-xv, 1-115. Price 1 rupee.]

The Indian Museum at Calcutta, formerly the Museum of the Asiatic Society of Bengal, is a most important Institution as regards Natural History, and especially Ornithology, for it contains numerous specimens contributed to it by all the best-known authorities on the birds of British India—not to mention the many types of Blyth, Jerdon, and other authors. It is quite right that a new list of its rich contents should be prepared, Blyth's well-known Catalogue having been issued as long ago as 1849. Mr. W. L. Sclater was at work upon it when he left India, and, as Mr. Finn tells us in his Preface, the manuscript of the present volume was prepared under his direction. Mr. Finn's chief task "has, therefore, been to see it through the press, after intercalating the numerous accessions made since the work was written."

The instalment of the List now before us deals with the Passerine families *Corvidæ*, *Paradisæidæ*, *Ptilonorhynchidæ*, and *Crateropodidæ* only, which are represented in the Indian Museum by 3301 specimens belonging to 416 species. About 66 specimens are types, mostly of Blyth. Of these a list was prepared by Mr. W. L. Sclater and published in this Journal in 1892 (*Ibis*, 1892, p. 73).

The only references given in this List are to the volumes of the 'Fauna of British India' and of the British Museum Catalogue. The specimens of each species are then enumerated, with the localities, authorities, and the Museum Index-numbers appended. The distribution of each species is shortly stated.

We trust that this useful piece of work, once started, may be brought to a speedy conclusion. No reason is given for the long delay of ten years which has taken place since the MS. was prepared.

9. *Finsch on the Birds of the Südwest Islands.*

[Systematische Uebersicht der Vögel der Südwest-Inseln von Dr. O. Finsch. Notes Leyden Mus. xxii. pp. 225-309.]

The "Südwest" are a chain of volcanic islands in the Banda Sea, some 27 in number, which extend eastwards from Timor to the Tenimber Islands. After an elaborate disquisition on what has been already done with regard to ornithology in this group by the collectors and naturalists of Holland, Germany, and England, Dr. Finsch calls special attention to the large collections recently made there for the Leyden Museum by Karl Schadler, who had previously worked in New Guinea and Amboina. Some of these have already been described (see Notes Leyd. Mus. xx. p. 129), but their interest is such that Dr. Finsch has been induced to put together a complete account of them, to which are added references to all the previous authorities on the subject. We have thus before us an excellent memoir on the Ornis of this interesting island-group, which, so far as it has yet been explored, is shown to be the home of 123 species. Of these, 21 are peculiar to the group. One species (*Rhipidura reichenowi*) is now described as new, the other novelties having been already characterized. On three plates appended to this memoir some of the more remarkable species of the Südwest group are depicted—*Sphecotheres hypoleucus*, *Gerygone kisserensis*, *G. wetterensis*, *Rhipidura reichenowi*, *Stigmatops notabilis*, and *Alopecænas hoedti*. The last-named is a very curious form of Ground-Dove discovered by Hoedt in Wetter in 1866, and is known only from the typical pair at Leyden.

10. *Führer on the Birds of Montenegro.*

[Beiträge zur Ornis Montenegro's und des angrenzenden Gebietes von Nordalbanien. Von Ludwig von Führer. Ornithol. Jahrb. xi. pp. 165-189, xii. pp. 1-79.]

This is a contribution to that excellent piece of work, Reiser's '*Ornis Balearica*,' which is now approaching completion, and gives an account of the author's travels in Montenegro and the adjoining countries in pursuit of a better knowledge of their birds. The appended list of species met with in Montenegro and on the Albanian frontiers contains 256 names. Amongst them are *Accipiter brevipes* Severzow, *Gypaëtus barbatus*, and *Anser neglectus* Suschkin.

11. Godman's '*Biologia Centrali-Americana*.'

[*Biologia Centrali-Americana*; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman. (Zoology.) Parts CLXIII.-CLXVIII. (R. H. Porter.)]

Good progress is now being made with the "Aves" of the '*Biologia Centrali-Americana*,' and three more portions have been issued since our last notice (*Ibis*, 1901, p. 501). In these the Accipitres are finished, and the succeeding Orders Steganopodes and Herodiones are treated.

12. Goeldi on the Birds of Amazonia.

[*Album de Aves Amazonicas* organizado pelo Dr. Emilio A. Goeldi, Director do Museu Paraense e publicado por ordem de S. Exc^a O. Snr. Dr. José Paes de Carvalho, Governador do Estado do Para. Supplem^{to} illustrativo a obra '*Aves do Brazil*' perlo Dr. Emilio A. Goeldi. Fasc. I. 4to. Zurich, 1900.]

Our ever active friend Dr. Goeldi is issuing a supplement to his '*Aves do Brazil*' (see *Ibis*, 1901, p. 501), containing a series of coloured figures of the more prominent Amazonian birds; of this the first part is now before us. It contains twelve plates, painted in colours, which give representations of groups of species of the different families that frequent the mighty river and its vicinity. The figures are mostly well drawn and are coloured with quite sufficient accuracy to render the species recognisable. We have no doubt that Dr. Goeldi's work will do much to promote the study of our favourite science in South America.

13. *Harris on Birds of the Canaries and South Africa.*

[Essays and Photographs. Some Birds of the Canary Islands and South Africa. By Henry E. Harris. 8vo. London, 1901. Pp. i-xiv, 1-212. Price 21s. net.]

Mr. Harris, though he tells us that his main object was to secure photographs, and that he did not originally contemplate writing a book in connexion with them, gives us a very pleasant account of his adventures in the Canary Islands and Cape Colony during the year 1899. His descriptions of the natural beauties of the country and of the inhabitants are very picturesque, while he affords a considerable amount of information about the birds at their breeding quarters, and is decidedly successful in his attempt to portray them by means of the camera. Of the plates, perhaps the most interesting are those of "ploughing with camels," of the eggs of the Cream-coloured Courser and of the sitting bird, of the nests of the Houbara Bustard, the Secretary-bird, the Lark-heeled Cuckoo and the Hammerkop, of the Stanley Cranes, the Gannets, and the Penguins; though some Passerine birds are also well represented. Six months were spent in Fuerteventura and Tenerife, and an equal period in South Africa; but, as to the islands, the time of year was too early for a perfectly successful ornithological expedition. In Fuerteventura the main places visited were La Oliva, La Antigua, Tuineje, and Puerto Cabras; in Tenerife, Vilaflor, Garachico, and Orotava (where the flower-carpet was on view); and in Cape Colony, Houw Hoek, Stanford, Caledon, Bot River Vley, Knysna, Bird Island, Seal Island, and Saint Croix—the last three in Algoa Bay.

14. *Hartert on his former Travels and Researches.*

[Aus den Wanderjahren eines Naturforschers. Reisen und Forschungen in Afrika, Asien und Amerika. Von Ernst Hartert. Nov. Zool. viii. pp. 221-355.]

Mr. Hartert proposes to give us an account of his former travels and researches in various parts of the world in 'Novitates Zoologicæ,' and begins here with the first eight chapters of it. The first four contain an interesting narrative of his journey through Nigeria to Kano and Socoto in 1885, in which many zoological allusions are introduced. Some

good photographs and excellent maps illustrate this part of the work. (See 'Ibis,' 1887, p. 353.)

The fifth chapter is devoted to an essay on the Fauna of the Canary Islands, the Avifauna of which has been of late years so fully worked out by Mr. Meade-Waldo (Ibis, 1889-94) and Dr. König (Journ. f. Orn. 1890). The 63 "breeding-birds" of the group are enumerated, and various new Canarian "subspecies" are created. In the course of the remarks it is proposed to make of our British Robin a subspecies *Erithacus rubecula melophilus*, and of our Swift a subspecies *Apus apus apus*.

The sixth chapter contains an enumeration of the 27 birds of the Los Islands, on the west coast of Africa, amongst which the most remarkable species is the extraordinary Sturnid *Coccycolius iris* Oust., only known as yet from this locality.

In the seventh and eighth chapters the author returns to "Haussaland," and gives us a list of the 189 species of birds as yet recorded to have been found within its limits. *Hypochæra** *wilsoni* (scr. *Hypochæra*) is described as a new species.

15. Hartert on new Birds from Ecuador.

[On some Birds from North-west Ecuador. By Ernst Hartert. Nov. Zool. viii. pp. 369-371.]

The following species are described—*Neocrex uniformis* and *Pittasoma rufopileatum*, besides some subspecies, while the remarkable *Dacnis berlepschi* Hart. and *Grallaria pur-ambæ* Rothsch. (already characterized in the Bull. B. O. C.) are figured.

16. Harting's 'Handbook of British Birds.'

[A Handbook of British Birds, showing the Distribution of the Resident and Migratory Species in the British Islands, with an Index to the Records of the Rarer Visitors. By J. E. Harting, F.L.S., F.Z.S. New and revised edition. London: John C. Nimmo, 1901. 1 vol. 8vo. 520 pp. Price 42s. net. †]

* Cf. Bp. Consp. i. p. 450 and the Greek Dictionary (χήρα, *vidua*).

† This work was published last year, but the copy sent to us was accidentally mislaid, and escaped our notice until it was too late for the last number.—EDD.

Mr. Harting's 'Handbook' of 1872* is known to all of us. He has now re-issued it in a much extended form, and illustrated it by a series of coloured figures of the heads of the birds, prepared from the drawings of the late Professor Schlegel. We have, therefore, now before us a volume of 520 pages and 35 plates.

As in the former work, British Birds are divided into two distinct categories—one containing "residents, periodical migrants, and annual visitants," and the other "rare and accidental visitants." Under the former heading are placed 262 species, under the latter 167—making altogether 429 species considered as appertaining to the British Avifauna. It is, of course, in many cases difficult to decide whether certain species should be placed in the first or second of these divisions, but in most cases our author seems to have come to a correct decision upon this point.

A very valuable feature in the second part of Mr. Harting's volume is the list of references to the records of the occurrences of the "rare and accidental visitors" in Britain. With the help of this we can find at once how many times any rarity that may turn up has occurred, where to look for an account of it, and, in many cases, where each individual specimen has been preserved. The Rustic Bunting (*Emberiza rustica*), for instance, has occurred three times in the British area (*cf.* p. 372) and references are given to the records of the three specimens.

In his nomenclature and arrangement our author is delightfully conservative. "Subspecies" and "homonyms" are alike ignored, and the good old-fashioned names, "understood of the people," are sternly adhered to. It is really refreshing, in these days, to find a naturalist who objects to the much-adored principle of unlimited priority, and boldly says:—"The increasing practice of changing well-known names for newly discovered ones on the ground of priority I regard as a misfortune to Science, for there is no finality in such a proceeding and never likely to be."

At the same time, as regards arrangement, we could not

* See 'Ibis,' 1872, p. 94.

go so far with Mr. Harting as to continue to keep the Accipitres at the head of the Class of Birds, and to sink the highly developed Swallows to the bottom of the Passeres, in order to bring them next to the Swifts. These, however, are but small blemishes in a useful work, well printed and well illustrated, which should be in the library of every "British bird-man."

17. *Hellmayr on the Genus Polioptila.*

[Zur Revision der Gattung *Polioptila*. Von C. E. Hellmayr. Nov. Zool. viii. pp. 356-361.]

The genus *Polioptila* is re-revised (*cf.* Nov. Zool. vii. p. 555) and a new "subspecies" is described.

18. 'Irish Naturalist.'

[The Irish Naturalist. A Monthly Journal of General Irish Natural History. Edited by G. H. Carpenter and R. Lloyd Praeger. Vol. x. Nos. 1-12. Eason & Sons, Dublin.]

This Journal makes a worthy commencement of the year 1901 with a notice by Mr. Ussher of Mr. R. M. Barrington's excellent volume on the 'Migration of Birds observed at Irish Light Stations.' A Tawny Owl recorded by Mr. Robert Patterson from Co. Down, and believed to be the first authenticated Irish example, was subsequently shown by the same gentleman to be one of nine birds obtained in the New Forest in June 1900 (during the close-time) and liberated in Co. Down by a gentleman who took "some interest in ornithology," but did not think it necessary to mention the introduction in print. This the Editors stigmatize as "falsifying the geographical record," and they proceed to express their opinion that, in some cases, "the introducer is almost as great an enemy to science as the exterminator." However, most of these Owls have already perished, as they were proscribed because they disturbed the neighbourhood by their hooting. Dr. Patters has a somewhat lengthy article on the Grey Phalarope, while among the various occurrences may be cited those of a Roller in Donegal, an adult King-Eider in Co. Down, and a young

Cuckoo killed by striking the lantern of the Skulmartin Lightship on the 26th of November, 1900—the latest date on record, we believe. So little is known about the Great and Sooty Shearwaters on our coasts that we welcome Mr. Ussher's paper on the frequency and abundance of these birds off the coasts of Kerry, Cork, and Waterford; the information being mainly derived from the experiences of Mr. H. Becher, who has, by the way, contributed some valuable notes respecting the autumn of 1901 to 'The Field,' and has sent some much-desired specimens to the Dublin Museum. Similar examples would be much appreciated at the Natural History Museum, South Kensington.—H. S.

19. *Le Souëf on the Eggs of Pitta iris.*

[Description of Eggs of the Rainbow-Pitta, *Pitta iris*. By D. Le Souëf, C.M.Z.S. Vict. Nat. xviii. p. 157.]

Mr. Le Souëf gives us an account of the nest and eggs of *Pitta iris*, taken on the Daly River, N.W. Australia, on the 24th of December, 1900. Mr. Campbell ('Nests and Eggs of Australian Birds,' p. 529) has mentioned them as "undescribed."

20. *Le Souëf on the Water-Birds of Riverina.*

[Among the Waterfowl in Riverina. By D. Le Souëf, C.M.Z.S. Vict. Nat. xviii. pp. 1-7.]

Mr. Le Souëf read before the Field-Naturalist Club of Victoria in February last year an account of his visit to the swamps of the Riverina district of New South Wales in the preceding December. The most interesting object noticed was a mixed breeding-colony of Cormorants, Herons, Spoonbills, and Ibises, with a single nest of the Wedge-tailed Eagle. Other birds were also met with.

21. *Martorelli on new Cases of Hybridism in Birds.*

[Due nuovi casi d'Ibridismo negli Uccelli. Nota Ornitologica del socio Prof. Giacinto Martorelli. Atti Soc. Ital. Sci. Nat. xl. pp. 1-23.]

Prof. Martorelli describes and figures two supposed

hybrids taken when adult and in the wild state. The first is attributed to *Turdus pilaris* and *T. merula*, and the second to *Dafilea acuta* and *Anas boscas*.

22. Matschie on the Zoo-geography of Western Micronesia.

[Bemerkungen zur Zoogeographie des westlichen Mikronesiens. Von Paul Matschie. J. f. O. 1901, pp. 109-114.]

Die Vogelwelt der neuesten deutschen Besitzungen in der Südsee. Von Paul Matschie. Illustrierte Deutsche Monatshefte, lxxxix. pp. 405-419.]

Under the name Micronesia the author designates the Pacific Islands lying between 130° and 180° W. long., *i. e.* the Pelew Islands, Yap, the Mariannes, and the Carolines. After quoting Wigglesworth's 'Aves Polynesiae,' he mentions recent additional authorities on this Avifauna and discusses its various relationships. Most of the genera not endemic are apparently Papuan. Tables of distribution are given, and it is shown that Micronesia may be divided into five smaller Avifaunas—Pelews, Yap, Mariannes, and Western and Eastern Carolines.

The same subject is pursued in the popular article in Westermann's 'Illustrierte Deutsche Monatshefte,' and is illustrated with figures of some of the more remarkable birds of Micronesia, and with a map, which shews the proposed divisions of its Avifauna very plainly.

23. Matschie on the Cassowaries.

[Einige Bemerkungen über die Verbreitung und Systematik der Kasuare. Von Paul Matschie. J. f. O. 1901, pp. 265-269.]

The publication of Mr. Rothschild's elaborate memoir on the Cassowaries in the 'Transactions of the Zoological Society of London' has induced Herr Matschie to prepare a series of notes on various points in the distribution and systematic arrangement of these birds. Amongst these he calls attention to the fact that the figures given by Mr. Rothschild of *Casuarius uni-appendiculatus* do not agree accurately with Blyth's original description of this species. Herr Matschie therefore believes these figures to represent a

different species, which he proposes to call *C. rothschildi*; of this there is also a young example living in the Zoological Garden of Berlin.

24. Meyer and Heller on the Eggs of *Æpyornis*.

[*Æpyornis*-Eier von Dr. A. B. Meyer und Dr. K. M. Heller. Abh. u. Ber. k. Zool. u. Anthrop.-Ethn. Mus. z. Dresden, Bd. ix. 1900-1.]

The two fossil eggs of *Æpyornis* in the Dresden Museum are carefully described and figured, and a list, with accurate dimensions, is given of all the eggs of the *Æpyornithidæ* known to exist in collections. Thirty-three specimens are catalogued, with lengths varying from 344.2 to 279 mm. They belong probably to several species.

25. Milligan on new Australian Birds.

[Description of a new Species of *Miraфра* (Bush-Lark) from Western Australia. By Alex. W. Milligan, Perth. Vict. Nat. xviii. p. 25.]

Description of a new Species of *Amytis* (Grass-bird) from Western Australia. By Alex. W. Milligan, Perth. Vict. Nat. xviii. p. 27.]

The *Miraфра* is characterized and named *M. woodwardi* and the *Amytis* *A. gigantura*.

26. North on Nests and Eggs of Australian Birds.

[Nests and Eggs of Birds found Breeding in Australia and Tasmania. (Second edition of Catalogue No. xii., entirely rewritten with additions.) By A. J. North. Part I. 4to. Sydney, 1901.]

The species here fully discussed and illustrated in the text are *Corvus coronoides*, *C. bennetti*, *Corone australis*, *Strepera graculina*, *S. arguta*, *S. melanoptera*, *S. cuneicaudata*, *S. plumbea*, *S. fuliginosa*, *Struthidea cinerea*, *Corcorax melanorhamphus*, *Ptilorhis paradisea*, *P. victoriae*, *Craspedophora alberti*, *Phonygama gouldi*, *Ptilonorhynchus violaceus*. Some of the nests are also figured, and the coloured plate contains eggs of *Corone australis*, *Gymnorhina tibicen*, *G. leuconota*, *Corvus coronoides*, *Strepera arguta*, *S. melanoptera*, *S. fuliginosa*, *S. graculina*, and *S. cuneicaudata*.

Information of all sorts is given, as is usual in Mr. North's works, while it is noticeable that he, with his opportunities

for observation of the live birds, places *Strepera* and *Struthidea* under the head of the Corvinæ, and *Corcorax* under the Fregilinæ. Details concerning Paradise-birds always maintain their interest, many of the nests and eggs having been quite recently discovered; the author, moreover, figures and discusses the curious tracheæ of *Phonygama gouldi*, *P. keraudreni*, and *Manucodia comrii*.

27. North on new Australian Birds.

[Description of the Nest and Eggs of the Painted Honey-eater, *Entomophila picta* Gould. By Alfred J. North, C.M.Z.S. Viet. Nat. xvii.

Description of a new Species of the Genus *Malurus*. By Alfred J. North, C.M.Z.S. Viet. Nat. xviii. p. 29.]

Mr. North describes the nest and eggs of the beautiful Honey-eater, *Entomophila picta*, from specimens taken near Bathurst, N.S.W., and a new *Malurus* from the interior of Australia—*M. assimilis*, allied to *M. lamberti*.

28. Regalia on the Cave-fauna of Palmaria.

[Sulla Fauna della "Buca del Bersagliere" e sull'età dei depositi della vicina "Grotta dei Colombi" (Is. Palmaria, Spezia). Nota di E. Regalia. Archiv. per l'Antropol. e l'Etnol. xxx. pp. 277-332.]

This is an account of recent investigations in the caves of the island of Palmaria, near Spezia, and especially of the newly-explored "Buca del Bersagliere." Remains of about 36 species of birds were discovered in the last-named cave, and the list is compared with that of the previously examined "Grotta dei Colombi." All the species of birds belong to Italian forms now in existence.

29. Rothschild and Hartert on Birds from the Solomon Group.

[List of a Collection of Birds from Kulambangra and Florida Islands, in the Solomon Group. By Hon. Walter Rothschild, Ph.D., and Ernst Hartert. Nov. Zool. viii. pp. 179-189.]

The birds of the Solomon Group are of special interest, as most of the islands contain local forms often provided with strong differential characters. The authors describe

collections recently received at the Tring Museum from their Collector, Mr. A. S. Meek, from Kulambangra, north of New Georgia, and from Florida near Guadalcanar.

The species represented in these two collections are 48 in number, of which 9 are described as new—namely, *Zosterops kulambangræ*, *Z. floridanus*, *Graucalus hypoleucus*, *Myzomela eichhorni*, *M. kulambangræ*, *Myiagra feminina*, *Rhipidura albina*, *Cacomantis addendus*, and *Hypocharmosyna meeki*, besides several subspecies.

In a footnote the *Eurystomus* of New Hanover is separated as *E. neo-hanoveranus* (! scr. *novo-hanoveranus*).

30. *Salvadori on Birds from Spitsbergen.*

[Intorno ad alcuni Uccelli della Spitzberghe. Per Tommaso Salvadori. Boll. Mus. d. Zool. e. Anat. Comp. d. R. Univ. d. Torino, xvi. no. 388.]

This is an account of the birds obtained in Spitsbergen during the visit there of King Victor-Immanuel III. (then Prince of Naples) in the summer of 1898 (see Mem. Soc. Geogr. Ital. ix. p. 82). The 74 bird-skins brought home are referred to 14 species, all well known. But Count Salvadori takes this opportunity to demonstrate that the so-called *Lagopus hemileucurus* of Spitsbergen is merely a phase of plumage of *L. hyperboreus*.

31. *Saunders on Antarctic Birds.*

[The Antarctic Manual for the use of the Expedition of 1901. Edited by George Murray, F.R.S. Birds: by Howard Saunders, F.L.S., F.Z.S., F.R.G.S. Pp. 225-238. Royal Geographical Society, 1 Savile Row, London, 1901.]

In the Manual composed for the use of our Antarctic explorers, edited by Mr. George Murray, will be found an excellent essay on the birds of the South Polar Regions, prepared by Mr. Howard Saunders. After a general discussion of the Penguins, Petrels, and Gulls met with to the south of 60° or a trifle to the northward, which form the bulk of the Antarctic Ornis, and allusions to the Sheath-bills (*Chionis*) and a Cormorant which is not yet properly identified, a systematic list of the 26 species more or less

certainly known as Antarctic is given; those found within the Antarctic Circle being designated by small capitals. There are only eight of the latter.

32. Sharpe's 'Hand-list of the Genera and Species of Birds.'

[A Hand-list of the Genera and Species of Birds. (Nomenclator Avium tum Fossilium tum Viventium.) By R. Bowdler Sharpe, LL.D. Vol. III. London, 1901. Pp. xii, 367. Price 10s. 6d.]

In the third volume of the 'Hand-list' the formidable task of cataloguing the great group of Passeres is commenced, and carried through the Mesomyodians into the Oscines. The fourth volume, to be issued, we are informed, in 1902, will contain the enumeration of the remaining Oscines and complete this important work.

The following table shows the numbers of the genera and species catalogued in the present volume, according to the classification there adopted:—

Order.	No. of genera.	No. of species.
XXXIV. Eurylæmiformes.....	7	16
XXXV. Menuriformes	1	3
XXXVI. Passeriformes.		
Subord. Mesomyodi	242	1665
,, Acromyodi	127	1256
	<hr/> 377	<hr/> 2940

So that we have enumerated in all 2940 species referred to 377 genera.

The task of classifying the Acromyodi or Oscines correctly is, as Dr. Sharpe allows, almost hopeless, according to the present state of our knowledge; but we cannot quite understand why he should commence his list with the Swallows. The Hirundinidæ, which have entirely lost their outer primary, are without doubt one of the most highly developed forms of Oscinine bird-life and should come very near the top of the series—*i. e.* at the further end—in a classification which commences, as Dr. Sharpe's does, from the bottom.

We also venture to suggest that it would have been a great

convenience to use the names of Families as "running titles" in the Hand-list instead of "Genera and Species of Birds," which is a piece of quite useless information to those who consult the work.

33. *Shufeldt on the Screamers.*

[On the Osteology and Systematic Position of the Screamers (*Palamedea*: *Chauna*). By R. W. Shufeldt. Amer. Nat. xxxv. pp. 455-461.]

Dr. Shufeldt compares the principal points of structure of the Screamer, the Swan, and the Turkey in a tabular form, and concludes that, taken as a whole, the Anserine characters of the Screamer are more evident than those of the other forms. "The Screamers should be placed near the Anseres, but apart and in an independent group." Most other modern authorities are of exactly the same opinion.

34. *Shufeldt on the Coccoyges.*

[The Osteology of the Cuckoos [Coccoyges]. By Dr. R. W. Shufeldt. Proc. Amer. Phil. Soc. xl. No. 165, pls. i., ii.]

In the present paper Dr. Shufeldt treats the Cuckoos of the United States after his usual fashion in writing of such groups. His own work on the same subject and the writings of other authors having been discussed, he reprints, with additions, one of his former articles on the osteology of *Geococcyx californianus*, which is followed by a note on its young, accounts of the osteology of *Crotophaga* and *Coccyzus* (including the young of the latter), and a synopsis of the osteology of the Crotophaginæ, Centropodinæ (represented by *Geococcyx*), and Cuculinæ (represented by *Coccyzus*). Lastly, he treats of the affinities of the Cuckoos, and finds in them much less kinship to the Caprimulgi, Cypseli, Trogones, Trochili, and Pici than to the other Picarian forms. As opposed to Dr. Sharpe, he would place *Diplopterus* directly between the Centropodinæ and Cuculinæ. In *Geococcyx* he finds the skull to differ from that described by Huxley, the pelvis to resemble that of *Porzana carolina*, and the tibio-tarsal shaft of comparatively large size in the young.

35. *Southwell on the Breeding of the Crane in East Anglia.*

[On the Breeding of the Crane in East Anglia. By Thomas Southwell, F.Z.S. Trans. Norf. & Norw. Nat. Soc. vii. pp. 160-170.]

In this article Mr. Southwell has put together many interesting notices respecting the habitual use of the Crane for food in England in former days. On one celebrated occasion in the reign of Edward IV. as many as 204 of these unfortunate fowls were included in the bill of fare. As regards the regular breeding of the Crane in the Eastern Counties, though this was probably the case, the evidence is but scanty. It appears certain, however, that on the 4th June, 1543, a "yong pyper Crane," which could hardly have been bred elsewhere, was obtained at Hickling, in Norfolk; and Dr. William Turner, in his 'Avium Historia' (1544), is most precise in his statement that in his days Cranes nested in the English marshes and that he had often seen their "*pipiones*."

36. *Stark's 'Birds of South Africa.'*

[The Fauna of South Africa. Birds: Vol. II. By A. C. Stark, M.B. Completed by W. L. Sclater, M.A., F.Z.S. London, 1901. R. H. Porter. Pp. xiv & 323. (Cf. Ibis, 1900, p. 394.) Price 21s. net.]

The present volume of the 'Birds of South Africa' has been completed by Mr. W. L. Sclater, the Editor of the Series, owing to the sad death of Dr. Stark during the siege of Ladysmith. The manuscript had been finished by the author, but required a considerable amount of revision and addition to bring it up to date; so that Mr. Sclater found it no slight task to prepare the sheets for the press, though as to the successful nature of his efforts there can be no two opinions. Mr. A. D. Millar of Durban, Dr. A. Reichenow of Berlin, Capt. Shelley, and Dr. Sclater are specially mentioned in the Preface as having given considerable assistance.

The families treated in this instalment are the Laniidæ, Crateropodidæ, Sylviidæ, Turdidæ, Muscicapidæ, Dicruridæ, Campophagidæ, Hirundinidæ, and Pittidæ, while the plan and arrangement of the whole work have been already noticed in

our pages. Eighty-three illustrations are given, chiefly of heads, feet, wings, and tails, but in a few cases of the nests: many of them giving a beautifully soft appearance to the parts figured.

The book contains a very large fund of information condensed into a reasonable space; but no one can read it without being struck by the immense amount of field-work that yet remains to be done with regard to South-African birds, the nests and eggs of many species—even of some breeding in Cape Colony—being as yet unrecorded. Andersson, the Layards, Ayres, are often almost the sole authorities that can be quoted; though a great advance has evidently been made of late, for which we are largely indebted to Capt. Alexander (the Zambesi), the Messrs. Woodward and Mr. Millar (Natal and Zululand), and Mr. Marshall (Mashonaland).

37. *Tschusi zu Schmidhoffen on Birds from Madeira.*

[Neue Formen von Madeira. Von Vict. Ritter v. Tschusi zu Schmidhoffen. Ornithol. Monatsber. ix. pp. 129-131.]

It is here proposed to separate the Blackcap of Madeira as a subspecies, because of the browner tint of the plumage, also the Spectacled Warbler, Linnet, and Goldfinch of the same island, on what appear to be very slight grounds. The Goldfinch of Madeira is stated to be "smaller," but only two specimens have been examined, and we venture to say that small as well as large Goldfinches may easily be found in Europe. The author also wishes to separate the Mountain Accentor of Dalmatia, Montenegro, and Greece as *Accentor collaris reiseri*, because of its grey upper plumage.

38. *Vallon on Count Arrigoni's Collection of Birds.*

[Die Sammlung italienischer Vögel des Professors Graf Arrigoni degli Oddi in Caoddo (Monselice) bei Padua. Von G. Vallon. Ornithol. Jahrb. xii. pp. 89-97.]

Herr Vallon, of Udine, has paid a visit to the celebrated Collection of Italian Birds belonging to Count Arrigoni degli Oddi, of Caoddo near Padua, and gives us an interesting account of it. There are about 7200 specimens

in the Italian Collection, of which about 4500 are skins and 1900 are set up, besides some 800 that are exotic. The series of colour-variations—albinisms and other kinds—is very rich. The skins are excellently made, carefully arranged, and fully labelled. Herr Vallon gives a long list of the more remarkable specimens, amongst which, we notice, are nine examples of *Buteo desertorum* and three of *B. ferox*, one of *Falco islandicus* from Venetia, also specimens of *Dendrocopos lilfordi*, *Turdus fuscatus*, *Budytes citreolus*, *Emberiza aureola*, *E. rustica*, and *E. pusilla*, with many other Italian rarities. The Count has, moreover, a considerable series of hybrids.

39. *Winge on the Birds of the Danish Lighthouses*, 1900.

[Fuglene ved de danske Fyr i 1900. 18de Aarsberetning om danske Fugle. Ved Herluf Winge. Vidensk. Medd. fra d. naturh. Foren. i Kbhvn. 1901, pp. 67-128.]

From the eighteenth report on the birds taken and observed at the Danish Lighthouses (see *Ibis*, 1901, p. 150) we learn that 700 specimens were received in the year 1900 at the Zoological Museum, Copenhagen, from 33 lighthouses. They are referred to 53 species. An example of the slender-billed form of the Nutcracker (*Nucifraga caryocatactes leptorhynchus*) was taken at the Hestehoved Station on Oct. 30th.

The total number of species as yet registered in these lists is 144.

X.—*Letters, Extracts, Notices, &c.*

WE have received the following letters since our last issue :—

SIRS,—Amongst the many interesting spring displays of the *Anatidæ*, that of the male Baer's Duck, which I have studied in the specimens living in the Gardens of the Zoological Society of London, is somewhat remarkable. He commences to "draw" about the same time as the Scaup Duck, to which the species is evidently closely allied, and as regards his nuptial courtship is similar in many respects to that bird.

To attract the female, the Baer's Duck (*Fuligula bueri*) half raises himself in the water by a sudden movement, while at the same time the chest is thrust forward and the head and neck are depressed to the scapulars. Whilst this quick movement is being performed, the wind-pipe is blown out to the fullest extent, and then the air is released, forming at once a singular distension of the neck. This somewhat curious display is manifested amongst the *Anatidae* by the Pochard and the Scaup only, but even these birds have somewhat dissimilar methods of courtship. Throat- and crop-distensions are, however, common amongst the Gallinaceous birds at the period of love-making. When much excited, Baer's Duck also contracts the black pupil of the eye till it is almost lost to the view of the spectator.

Yours &c.,

June 9th, 1901.

J. G. MILLAIS.

SIRS,—I have lately received, through my native collector, two specimens of the handsome Night-Heron discovered by the late Mr. Whitehead in Hainan, *Nycticorax magnifica* (Grant, Ibis, 1899, p. 585; P. Z. S. 1900, p. 493, pl. xxxiii.). They were shot near Chinteh, in Anhwei Province, on the south bank of the Yangtse, a distance of about 900 miles N. by E. of the locality where the type was procured. It is probable, therefore, that this species is distributed, in summer at least, throughout the hill-districts of Fokien, Chekiang, and Anhwei, which provinces are very similar in general character and natural productions. Fokien has been thoroughly worked by Messrs. Rickett and La Touche, and my collector has made frequent trips in Chekiang and Anhwei, the neighbourhood of Chinteh being favourite ground with him. It is therefore extraordinary that so conspicuous a bird should have remained so long undiscovered. The two specimens obtained were shot on different evenings when coming to roost in high trees; by day they could not be seen. Two others were seen, but not secured.

Yours &c.,

Shanghai,
26th August, 1901.

F. W. STYAN.

SIRS,—Two Eared Grebes (*Podiceps nigricollis*), male and female, were shot on a large pond about three miles north of this village on the 19th of September, 1899. They had not quite assumed the winter dress, and in the male the sides of the head were still tinged with a dark rufous colour. They had not been seen on the pond previously and were clearly on migration; but, for several reasons, I think that they had passed the summer in this country and were not merely migrants which had recently arrived from abroad. The date is full early for foreign birds to have reached the middle of England. It is unlikely that two immigrant individuals (presumably a pair) should have wandered in company so far inland as Oxfordshire, where this Grebe is very rare as a visitor—far rarer than the Slavonian Grebe. The only connexion between the pond they were killed upon and the Thames is a small brook, a branch of one of the tributary streams which flow into the Cherwell many miles above Oxford. Even the Slavonian Grebe, which reaches Oxfordshire by way of the Thames, and is not very uncommon on that river above Oxford, is hardly known on these remote subtributary streams in the north of the county. I think also that this pair of Grebes were *not* non-breeding birds, hatched in 1898 and just over their autumnal moult, because in that case neither of them would have had any sign of rufous colour on the head, this colour not being exhibited by the young bird in the first summer following the year in which it was hatched (I conclude this is so from the examination of a bird shot in Anglesea on the 1st of August), and not being assumed at the autumn moult.

The organs of reproduction in the Oxfordshire birds were small, but this is usually the case with birds in early autumn. The only sign of (possible) immaturity shown by these examples was the colour of the irides—golden yellow; but the colour of the irides of Grebes is notoriously very variable, and may possibly change with the seasons.

It seems, therefore, reasonable to suppose that this pair of Eared Grebes had bred, or had attempted to breed, on one of the large reservoirs of Oxfordshire, Warwickshire,

or Northamptonshire, three of which are within eight miles of the pond on which these birds were shot. On all these reservoirs the Great Crested Grebe has bred for many years.

I venture to think that this evidence in support of a probable case of the Eared Grebe breeding in this country is of sufficient importance to be mentioned in 'The Ibis,' since the British Islands lie within the geographical breeding-range of the species, which is recorded to have been found in summer as far north as Jutland and to nest commonly in Southern Spain; while to the east as well as to the south of us it is common.

These two specimens are in my possession, and were seen by me three days after they were shot.

Yours &c.,

O. V. APLIN.

Bloxham, Oxon,
15th November, 1901.

SIRS,—August 9th, 1901, found H.M.S. 'Diana,' in company with other vessels of the Mediterranean fleet, at anchor at one of the islands of the Levant. Having previously arranged with Capt. Ferris, of the 'Empress of India,' to lend me his picket-boat, I reminded him of it by making the pre-arranged signal, and he came to fetch Commander Halsey, Dr. Stenhouse, and myself. Armed with ropes, canvas sling, egg-blowers, guns, and plenty of No. 6's, we started at 1.10 P.M. and ran to a small island at the entrance of the harbour some miles off: here, as we passed in the ship the day before, we had made out several Falcons skimming about. Luckily the wind was light and off shore, and there was but little swell; so we had no trouble in landing in the galley and skiff, which we had brought in tow.

We had no difficulty in making out that our Falcons were *Falco eleonora*, and we were soon at the top of the island endeavouring to find their breeding-places, as August is the time, strangely enough, that this bird lays—no doubt with the intention of feeding its young on the members of the autumn migration.

The island slopes steeply to the water at the northern end, but on the other faces is clifty, particularly at the south. It is composed of rough sandstone, bits of which treacherously break off in the hand ; but on the whole, if you wear india-rubber-soled shoes, the climbing is good. Vegetation is scarce, a few rock-plants and wild asparagus being all that I saw. The southern end of the island is split from the main portion by a deep crevice ; but we managed to scramble up the face of it, and shortly afterwards I heard a shout from Stenhouse announcing that he had found eggs : and, on joining him, sure enough, in a little sandy-floored cavern, some 25 feet down the face of the cliff, lay three eggs. I was so pleased that I did not wait to put myself in the sling, but threw the rope over and, with the Doctor and my coxswain Muckle holding on above seated with their feet against a rock, down I went, hand over hand, and was soon in the cavern. Two eggs were lying side by side, and a third some two or three feet away. There was absolutely no attempt at a nest, or even a hollow : the eggs lay on the bare dry sand. I soon had them in my handkerchief, and holding this in my mouth, made a bowline in the end of the two-inch manilla, and in a minute or two was at the top exulting.

After a few moments' gloating we proceeded with our search, and fifty yards further on my coxswain saw some more eggs, this time not more than 12 feet down the cliff. More cautious this time, I got into the canvas sling, of which Col. Willoughby Verner had given me the pattern, and was soon over the edge and in possession of the clutch of three, again curiously arranged, two of the eggs being together, the third being some two feet away. This clutch was handsomer than the other and more boldly blotched.

We now thought that we had done well, and seeing nothing more retired across the crevice with the intention of returning to the boat and going after Blue Rock-Pigeons, of which there were a good many on the island and yet more on the clifty coast of the mainland. Taking one more look with the binoculars at the face of the cliff we had left, the Doctor declared he saw an egg ; further looking revealed

the other two, separated as usual from the third, and this time behind two small stones on the floor of the cave. We were soon back, and this time Stenhouse went over, not twenty yards from the first nest; we soon had the eggs, which proved the lightest in colouring of the three clutches. Before going to the boat we blew them, and found all more or less incubated, some perhaps five days, some quite twice that time; but none were infertile, as we had expected the separated single eggs to be, and no one could doubt for an instant that the three in each case formed one clutch, the colouring being identical, though the separated specimen of the first clutch was rather the smallest.

The Falcons (very dark birds) seemed to pay little attention to us, and uttered no sound that I heard; they did not come within easy gun-shot, for which I was secretly rather glad, though I wanted a skin. We did not shoot at them: they looked like gigantic Swifts, with their sooty colour and long pointed wings.

We were soon on our way to the cliffs where the Blue Rock-Pigeons abound. All the best stances had been taken up; but we found a place, and I know that I fired thirty-seven shots for eight Pigeons, an Alpine Swift (spread of wing 20 inches), and a Kestrel (*Falco tinnunculus*), which I shot by mistake, as it came fair from the sun: the Pigeons gave extraordinarily difficult shots. Occasionally an Eleonora passed along, looking no doubt for wounded birds, and a couple of Eagles were also hunting (I could not make out their species). Both Alpine and Common Swifts were hawking high overhead, and one Red-legged Partridge passed out of range, going very fast away from the Eagles: he was nobbled by a fine shot of Halsey's a few seconds later, and was a very large bird, weighing 24 oz.

The gloaming was on us, and it was pitch-dark before we got to the passage in the inner harbour. However, with the lights of the fleet to help, 9 o'clock saw us on board, after a delightful and sporting day.

I forgot to mention that on the island we found some old nests, apparently of Gulls, and in one cave on the face of the cliff was a large nest of sticks: I shall examine this,

if I am ever at the place again in April or May. Lots of Shearwaters (*Puffinus kuhli*) were sitting on the water or skimming over its surface, and we saw a small bird on the island which looked like one of the Wheatears; it apparently had young, by the persistent way it returned to some rocky debris.

The following are the measurements of the clutches of the eggs of *Falco eleonora*:—

1st clutch.	2nd clutch.	3rd clutch.
43 × 35 mm.	44 × 35 mm.	42 × 35 mm.
44 × 35 mm.	44 × 35 mm.	43 × 35 mm.
44 × 34 mm.	45 × 35 mm.	41 × 35 mm.

Yours &c.,

A. M. FARQUHAR, Capt. R.N.

SIRS,—During August of the present year I procured a male specimen of the large Indian Weaver-bird (*Ploceus megarhynchus* Hume) in the Calcutta bird-market. The dealer from whom I purchased it told me that he had bought it a few days previously at a fair at Gorakhpur, in the North-West Provinces. Mr. Hume's types now in the British Museum were obtained from Kaladoongi, near Naini Tal, North-West Provinces. The two specimens obtained by Mr. Finn for the Indian Museum, Calcutta, also came from Naini Tal. Gorakhpur is 300 miles south-east of Naini Tal, and 100 miles south of the Nepal territory.

I had no difficulty in recognising the specimen, from the excellent coloured plate in the January number of 'The Ibis'; also because I was already acquainted with the two birds obtained by Mr. Finn—one of which is now on deposit at the London Zoological Gardens, whilst the other is preserved in the Indian Museum, Calcutta. The bird, when I first obtained it, was in brilliant summer plumage; it is now (November) rapidly assuming the more sombre winter garb. Since Mr. Finn's recent return to India from Europe I have referred the bird to him, and he agrees with my identification.

Yours &c.,

1 A Camac Street, Calcutta, India,
November 21st, 1901.

E. W. HARPER.

Additions to the American Museum of Natural History.—The report of the American Museum of Natural History for 1899 informs us that the "Department of Vertebrate Zoölogy" has received 1108 mammals, 3139 birds, about 1200 reptiles, and 23 fishes. About one hundred birds have been added to the Exhibition Collection, and also several new bird-groups, including the "Large Brown-Pelican" group. The "Local Collection of Birds," which includes examples of the species found within fifty miles of New York City, has been installed and forms one of the most instructive features of the department. Besides representatives of nearly all of the birds found in the immediate district, there are special cases devoted to the birds found there at particular seasons, the specimens being changed from month to month in order to show just what birds are present at any given season of the year. This arrangement proves very serviceable to local bird-students, who thus have only a few specimens to pass in review in their search for any particular species. Considerable material has been gathered for additional bird-groups, and several thousand skins have been received from South America which furnish many desirable specimens for mounting.

The Ruskin Plot.—In memory of his old friend John Ruskin, Mr. Henry Willett, of Arnold House, Brighton, has made an interesting and valuable gift to the Ashmolean Natural History Society of Oxfordshire. It consists of a piece of ground, about five acres in extent—woodland, marsh, bog, and water,—which contains many local and rare specimens of animal and vegetable life. It is Mr. Willett's wish that the land should be known as "The Ruskin Plot," and that it should be kept for all time in its natural condition. In order to ensure this a Trust is being prepared, which will vest the plot in the following Trustees:—The Lord Lieutenant of Oxfordshire, the Mayor of Oxford, the Vice-Chancellor, the Radcliffe Librarian, the Hope Professor of Zoology, the Sherardian Professor of Botany, and the donor.

Mr. Willett has done for Oxford what Mr. Rothschild has accomplished for Cambridge, in securing for the University a piece of Wicken Fen, the haunt of the Swallow-tail Butterfly. The Ruskin Plot is situate at Cothill, near Abingdon, Berks, and is not meant so much for collecting-purposes as for observation. It is hoped that a systematic record year by year of a piece of ground uninterfered with by cultivation will be in itself of considerable scientific interest. (Museum Journal, i. p. 139.)

The Protection of Birds in New Zealand.—In common with New Zealand ornithologists, we have often deplored the traffic in the rare birds of that country, threatening, as it does, the extirpation at no distant time of many of the unique forms. The Government of our progressive Colony has at length devised an expedient which, we hope, will put an effectual stop to this traffic. A measure has been passed by the local legislature, under the title of “The Maori Antiquities Act, 1901,” for the ostensible object of prohibiting the exportation of ancient carvings and other works of Maori art; but the Act is made far-reaching, and its provisions are extended to all “objects of scientific value or of historical interest relating to New Zealand.” There is a proviso exempting from its operation any “botanical or mineral collections or specimens,” but not zoological. This gives the Government the power to put down with a firm hand the dealers’ depredations, of which so much complaint has of late been heard. The new measure will give the very distinctive avifauna of New Zealand a chance of surviving; and this will be a matter of delight to all lovers of birds. The last captured specimen of *Notornis mantelli* could only be kept in the colony by the Government coming forward and purchasing it, for £250, for one of the local museums. This was in deference to strong public opinion on the subject. Under the present statute-law no such specimen could be sent away without the express written authority of the Colonial Secretary; and we may be sure that this would not be granted, except perhaps in favour of some public museum. We heartily congratulate our

Antipodean brethren on this new departure in the way of protective legislation.

Prof. Davenport's Caution to Splitters!—"There is only one class of zoologists that I would wish to blot out, and that is the class whose reckless naming of new 'species' and 'varieties' serves only to extend our work and the tables of the conscientious synonym-hunter. Other than such all classes will contribute to the advancement of Science. No doubt there are unlabeled species, and no doubt they must, as things are, be named. And no doubt genera and families must be revised and some groups split up and others lumped. So welcome to the old-fashioned systematist, though his day be short, and may he treat established genera gently!"—Prof. C. P. DAVENPORT, in his Address to the Section of Zoology of the American Association for the Advancement of Science, at Denver, Col., U.S.A., 1901.

Further Abyssinian Exploration.—We have the pleasure of announcing that the well-known collector, Mr. Edward Degen, is going out to Abyssinia to join Col. Harrington at Adis Abeba, and that all his collections are to be sent to the British Museum. Mr. Degen will commence to collect zoological specimens to the north of Adis Abeba, and gradually work northwards to Lake Tana.

The Irruption of the Nutcracker in the Autumn of 1900.—An extract from the 'Schwalbe,' kindly sent to us by Victor Ritter von Tschusi zu Schmidhoffen, gives further particulars of the invasion of the Slender-billed or Siberian form of the Nutcracker (*Nucifraga caryocatactes*) into North-eastern Europe in the autumn of 1900, which, although not to be compared with the great invasion of 1844, was spread over a large area. Particulars are given of many occurrences in Bohemia and Moravia, and of a few in Silesia, Upper and Lower Austria, Hungary, and Croatia. We know also that some of the flock reached Holland (see Bull. B. O. C. xi. p. 48), and one at least appears to have strayed as far as England,

not, however, arriving till January 1901 (see 'Ibis,' 1901, p. 737), and one to Denmark (see above, p. 163).

A wonderful new Bird of Paradise.—In the last number of the 'Ornithologische Monatsberichte' (Jahrg. ix. p. 185) Dr. Reichenow describes a new and wonderful Paradise-bird, a skin of which has been recently received at Berlin from Kaiser Wilhelm's-land (German New Guinea), where it is said to have been obtained in the neighbourhood of Friedrich-Wilhelm's Hafen. It appears to be probably a bastard between *Seleucides niger* and some species of true *Paradisea*—perhaps *P. minor finschi* or *P. augustæ-victoriæ*, nearly every feature of the novelty being met with in one or the other of these two forms. Dr. Reichenow proposes for this bird the name of *Paradisea mirabilis*, if it should turn out *not* to be a hybrid; and adds that if such shall be found to be not the case, it would probably be necessary to give it a new generic name. A figure of this bird will be given in the 'Journal für Ornithologie.'

The Pretoria Museum and Zoological Garden.—We are informed that Mr. Lewis T. Griffin, now Taxidermist at the South African Museum, Capetown, after six years' service in that Institution, has accepted an appointment as Chief Taxidermist to the Pretoria Museum and Chief Overseer of the Zoological Garden attached thereto. The Director of both these Institutions is Dr. J. W. B. Gunning, F.Z.S.

XI.—Obituary.

MR. JOHN YOUNG, MR. H. M. COURAGE, the Rev. H. A. MACPHERSON, MR. W. DOHERTY, and Cav. L. M. D'ALBERTIS.

MR. JOHN YOUNG, who died on the 25th of May last, was the second son of the late Rev. Edward Newton Young, Rector of Quainton, Bucks, and was born in June 1838. Being originally intended for the Navy, he was educated at Dr. Burney's noted Naval College at Gosport, but a slight deafness altered his destination, and, after a voyage to India

in 1856-7, he became a member of the staff of the War Office in 1858, and retired on pension in 1893. During all his life Young's spare time was almost entirely devoted to field-ornithology, and few men in this country were better acquainted with the habits and the notes of birds—for Young had an excellent "ear," in spite of the deafness to which allusion has been made. He was elected a Member of the B. O. U. in 1878; but his name does not appear as a contributor to this Journal, and, in fact, he wrote very little anywhere. Young lost no opportunity of travelling, and made a collection of birds—especially of pelagic species—of considerable scientific value, during a year's cruise to South America, Japan, China, &c., in the yacht 'Golden Fleece,' in 1886-7, but no account of it was ever printed. In fact, owing to this excellent observer's bad health of late years and consequent retirement, his death occurred almost unnoticed.

Mr. HAROLD MITCHELL COURAGE, of Snowdenham Hall, Bramley, Surrey, who died on August 14th, at the early age of 40, was elected a Member of the B. O. U. in 1892, but does not appear to have contributed to the pages of 'The Ibis.' He left his collection of birds, consisting of from 6000 to 7000 specimens, to Cheltenham College. A few years ago Mr. Courage presented a representative collection of British birds to the Museum of Hobart, Tasmania.

By the death of the Rev. HUGH A. MACPHERSON, at the Rectory, Pitlochry, Perthshire, on the 26th of November last, Ornithology has suffered a severe loss. Born at Calcutta on February 19th, 1858, the eldest son of a former Editor of the 'Quarterly Review,' Mr. Macpherson was educated at Haileybury College, whence he went to Oriel College, Oxford, in 1876, taking his degree in 1881, and being ordained in the following year. In 1888 he was appointed Chaplain of Carlisle gaol, and in 1897 became Perpetual Curate of Allonby, Cumberland, while the incumbency of the Episcopal Church of Pitlochry fell to his lot in 1900. Having been elected a Member of the B. O. U. in 1886, Macpherson made

many valuable communications to 'The Ibis,' amongst which the introduction to the British List of the Isabelline Wheatear (*Saxicola isabellina*) and the Frigate-Petrel (*Pelagodroma marina*) deserve special mention. He also wrote papers for the 'Zoologist,' the 'Annals of Scottish Natural History,' and the 'Field,' as well as the scientific portions of the volumes on "Grouse," "Partridge," and "Pheasant" in Longman's 'Fur and Feather' series; but his most important works were the 'Fauna of Lakeland' (Edinburgh, 1892) and a unique and exhaustive volume on the 'History of Fowling' published in 1897. Macpherson was a thorough naturalist, and his varied sources of information were always freely placed at the service of his friends, by whom his loss is severely felt, and by few more than by the writer of this brief notice.—H. S.

MR. WILLIAM DOHERTY.—The well-known zoological collector, William Doherty, whose decease we have already mentioned, succumbed to an attack of dysentery in the Railway Hospital at Nairobi, British East Africa, on the 25th of May last year. Doherty was born in 1857 at Mount Auburn, Cincinnati, where his parents are said to be still living. It was not until 1882, after lengthened travels through Europe, Asia Minor, Persia, and India, that he began to devote his energies mainly to Natural History. He soon became known as an excellent collector and acute observer, and wrote several papers in the 'Journal of the Asiatic Society of Bengal,' which attracted much notice, but at that time he only worked at Insects and Land-shells. Mr. Hartert, who has kindly assisted us in preparing these notes, met with Doherty in the Malay Peninsula in 1888, and travelled in his company through Assam and the Naga Hills. Doherty came to Tring in 1895, when preparing to start on his last great expedition to the eastern tropics, and was there persuaded to add birds to his field of operations. The great success to which he attained in this branch of Zoology is well known to all who have studied the numerous articles on his bird-collections published in the 'Novitates Zoologicæ.'

After this Doherty returned home to America, but early last year was again in England, and arranged to make a new expedition to East Africa. He left for Mombasa in March 1901, and was quickly at work up country, in the neighbourhood of Lake Naivasha and the Mau Escarpment. Here it was that he discovered the remarkable new Bush-Shrike, *Laniarius dohertyi*, which has been dedicated to his memory by Mr. Rothschild (Bull. B. O. C. xi. p. 52).

There are now lying in the Tring Museum several parcels of Doherty's bird-skins from New Guinea, the Southern Philippines and East Africa, not yet worked out. Articles on these collections, as also a more complete notice of the life and labours of this active and successful naturalist, prepared by Mr. Hartert, will shortly appear in 'Novitates Zoologicae.'

Another formerly well-known ornithological collector whose loss we have to deplore is the Cavaliere LUIGI MARIA D'ALBERTIS, one of the earliest explorers in New Guinea, who, as we learn from 'The Geographical Journal' (xviii. p. 629), died at Sassari, in Sardinia, on the 2nd of September last. D'Albertis's travels in New Guinea, of which he gave to the public a full account in 1880 ('New Guinea, what I did and what I saw': 2 vols., London, Sampson Low), extended over a period of five years. He first visited that country in 1872, in company with Dr. Beccari, and on that occasion ascended the Arfak Range and lived in a Papuan hut, at a height of 3600 feet, for about a month. Here he discovered the beautiful Paradise-bird, *Drepanornis albertisi* Scater, which will worthily perpetuate his name, besides many other rare birds. In 1875 d'Albertis resided for some months on Yule Island, near Port Moresby, and in November of that year joined Mr. McFarlane in a pioneer voyage up the Fly River. During two subsequent visits, of which an account was given to the world by the Geographical Society of London (see Proc. R. Geogr. Soc. i. 1879, p. 4), this river was fully explored and traced almost to its sources, and large collections were made, which, we believe, are now, along with most of d'Albertis's other specimens, in the Museo Civico of Genoa.

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XII.—*On some rare Palæarctic Birds' Eggs.*

By H. E. DRESSER, F.Z.S.

(Plate VI.)

DURING the past twelve months I have been experimenting upon the three-colour process for eggs, with a view to the publication of a work on Palæarctic Oology illustrated by that method. Thanks to Mr. Geddes, of Messrs. André & Sleigh, Ltd., successful results seem now to have been attained. The plate accompanying my last paper (*Ibis*, 1901, plate ix.) was executed by this process from a water-colour drawing, but the figures in that accompanying the present paper have been photographed from the eggs direct, without the intervention of an artist, and, in fact, have not been touched by hand. I give these particulars because this is undoubtedly the first illustration of birds' eggs executed by the new process which has been published.

The Plate contains figures of the eggs of the following species:—

(1) *CHETTUSIA LEUCURA* (Licht.). White-tailed Plover. (Pl. VI. figs. 1 & 2.)

Nothing appears to have been known respecting the nidification of this Plover until Mr. N. Zarudny found it breeding in Transcaspia, as stated below. It is a somewhat rare species in South-eastern Europe, but nests in Trans-

caspia and Turkestan, and is found in Persia, Afghanistan, Northern India, and North-east Africa in winter. As a rare straggler it has also occurred in the south of France and at Malta. In Southern Russia it is a characteristic species of the Aralo-Caspian region, whence it has strayed as far north as Orenburg, having been obtained in that district on several occasions. According to Mr. Zarudny, the White-tailed Plover frequents the clayey and saline plains which surround the bare shores of the lakes and morasses of Transcaspiæ. These plains are to some extent covered with low vegetable growth and scattered patches of short grass, and it does not seem to matter to the bird whether the lakes and morasses are of fresh or saline water. In its general habits it much resembles *Chettusia gregaria*, but there is a difference in its cry, which it is not easy to describe. It is extremely lively and vivacious, and fond of the society of its congeners. It runs with great facility, and is at least as active on the wing as *Vanellus vulgaris*, while in the pairing-season it indulges in aerial evolutions similar to those of that species. It is also wary and watchful to a degree, and should anyone approach the nesting-places it apprises other birds of the danger by its loud cries, flying off to meet the intruder, and making use of every artifice to lure him away. Owing to its extreme caution and watchfulness, other species affect its companionship to a large extent; and where this bird is found it is impossible to stalk Swans, Geese, and other large birds, for directly the gunner arrives in the vicinity the White-tailed Plover flies over him and with loud cries warns the denizens of the morass of the impending danger.

The present species is never found far from water, and seeks either on the shore or in the shallows its food, which consists of worms, aquatic insects of various kinds and their larvæ. During the hottest part of the day it either rests on the shores of the lakes or in water which reaches up to its belly.

The White-tailed Plover breeds in isolated pairs, but, as a rule, in spots not far distant from others of its own or allied species. The nest is usually placed on the shore of a lake

or morass, sometimes close to a small earth-mound, and often in a perfectly exposed position. Not unfrequently a pair will take possession of a small islet or tongue of land sparsely covered with grass, the nest itself being a mere heap of dry herbage with a slight depression in the middle. The full complement of eggs varies from two to four, consisting more frequently of the smaller number. In general appearance they much resemble those of *Chettusia gregaria*, but are considerably smaller; the ground-colour is clay-ochreous, occasionally tinged with olivaceous, and the markings, which are commonly distributed over the surface of the egg, though, as a rule, more profusely at the larger end, are black, the shell-markings being paler and duller, and the surface-spots and blotches deeper in colour. The length varies from 1·5 to 1·7 and the width from 1·12 to 1·15 inches. In the early part of May Mr. Zarudny found both fresh and incubated eggs, while at the end of May and early in June he saw, near Merv, young birds just able to fly.

The two eggs figured are a clutch received from Mr. Zarudny, and were taken by him at Dort Kuju, in Transcaspia. They measure 1·59 by 1·15 and 1·56 by 1·12 inches respectively.

(2) GALLINAGO STENURA. Pin-tailed Snipe. (Pl. VI. figs. 3-6.)

According to Taczanowski, Col. Prjevalski found the Pin-tailed Snipe breeding on the Ussuri, in Mongolia; and that traveller has given (Rowley's Orn. Misc. iii. p. 92) some details respecting its habits, but has not described or figured the nest and eggs. I may also remark that the egg figured by Dr. Dybowski (J. f. O. 1873, p. 104, tab. ii. fig. 31), and referred to under the name "*Gallinago heterocerca* Cab.," is, as Taczanowski informed me, not that of the present species, but of *Gallinago megala* Swinhoe.

Mr. H. Leyborne Popham met with this Snipe on the Yenesei in 1895, and shot a female, apparently from the nest, but, after a careful search, failed to find the latter. In 1897, however, he discovered on the 28th May a nest of

this Snipe and shot the parent bird. Later he found three more, one at the Monastery (65° 40' N. lat.) and the other two on the tundra. Two of these four nests contained four eggs each and the others only two. The eggs he describes as differing considerably from those of *Gallinago caelestis*, in being larger, in having the ground-colour as in eggs of *Gallinago major*, and in being much more richly marked, the spots being in almost all cases very profuse at the larger end and in some cases confluent. The measurements of these eggs were 1·59 by 1·24, 1·61 by 1·12, 1·66 by 1·2, and 1·74 by 1·18 inches respectively. Mr. Popham has also given (*Ibis*, 1898, p. 514) some particulars of the habits of the bird, which I need not repeat here. On his third visit to the Yenesei River in 1900 he took four more nests of this Snipe.

On Plate VI. I have figured four of the eggs, in order to shew the variations as clearly as possible. These were all taken on the Yenesei.

EXPLANATION OF PLATE VI.

Figs. 1 & 2. Eggs of *Chettusia leucura*, from Transcaspia.

3-6. Eggs of *Gallinago stenura*, from the Yenesei.

Fig. 3. From clutch No. 352. June 26th, 1897.

4. „ „ No. 495. May 25th, 1900.

5. „ „ No. 178. May 29th, 1897.

6. „ „ No. 497. June 27th, 1900.

XIII.—*On a Collection of Birds from Western Australia.*

By ROBERT HALL.

[Concluded from p. 143.]

34. *MELITHREPTUS CHLOROPSIS*. Western Lunulated Honey-eater. (Hall's Key, p. 38.)

A, B, C. Ad. sk. Sept. 25th, 26th, and 27th, 1899. Denmark.

D. Young.

These specimens differ decidedly, in so far as the eye-region is concerned, from all those previously referred to. The question that has interested us most of late is whether

Dr. Gadow was right in joining this species to the eastern *M. lunulatus*.

From personal observation and from my collection of skins I conclude that there is a western representative of *M. lunulatus*, so we may now separate the two forms joined in the British Museum Catalogue. Besides this a difficulty presents itself if we wish to refer my skins to the species *M. chloropsis*, because, I take it, Gould has insufficiently described the eye-region of the bird, and that part is incorrectly coloured in his plate. I do not care to regard my skins as giving evidence of a new species, because I believe that Gould has described two phases; besides which there is a third, hitherto unnoticed—and that the most adult, as the naked spaces surrounding the eye are large. More extended research may shew that (*a*) the pale green of the bare space above the eye changes into (*b*) a pale wine-yellow, and at a later season into (*c*) a sappy white. Furthermore, at this later season it may be shown that a bare space becomes prominent below the eye, and that there is a hidden bare region at the posterior angle, the former being leaden blue and the latter faint blue-green. No reference has been hitherto made to the bare spaces below and behind the eye: (*a*) and (*b*) are the parts as described by Gould, while (*c*) represents the appearance in three skins collected by myself, and in at least six others closely and carefully noted and found to possess the same distinct marks. Since the eastern *M. lunulatus* varies in the colour of its eye-region with age (this is how I view the shades of red), the western form may for the present be assumed to do likewise, but apparently to a greater extent. Future research may show more points of interest in this connexion.

Description of these parts in the specimens secured by the writer:—Bare space above the eye dull sappy- or fungus-white. Bare space below the eye, which is quite as large, dull lead-blue in colour. Hinder angle of both bare parts that are hidden by the imbricate feathers faint blue-green. Iris bright hazel, with a tendency to red.

In comparing these three skins with five of *M. lunulatus*,

I find that they are more brightly coloured and that two are considerably larger, while the third has practically the same measurements of bill and wings.

The western skins shew :—

A and B. Total length 5·85 inches, wing 3·15, culmen 0·52.

C. Total length 5·25 inches, wing 2·9, culmen 0·45.

My observations on this form were made in the Karri forest country that lies some fifty miles in from Albany and has only recently been opened up by a timber company. To what extent this will affect the bird I cannot well say.

There is a specimen of the nest of this species in the Perth Museum which has the peculiarity of being much like that of the Robin, *Petræca phanicea*. Those of the *Melithrepti* are not generally loosely constructed and placed between three strong prongs. However, this does not seem more wonderful than that the western Spine-bill should build an abnormal type of nest in a similar position near Albany.

35. GLYCYPHILA OCULARIS. Brown Honey-cater. (Hall's Key, p. 40.)

A. Ad. ♂. Geraldton. 27.10.99. Total length 5·25 inches, wing 2·64, tarsus 0·65, tail 2·25.

B. Ad. ♀. Geraldton. 14.10.99. Total length 5·35 inches, wing 2·63, tarsus 0·65, tail 2·25.

C. Young. Geraldton. 27.10.99. Total length 3·5 inches, wing 1·85, tarsus 0·65, tail 0·9.

Description of an immature bird (being fed among the foliage by the parents; this is the young of A).—The abdomen and breast are faint yellow. A large area behind and below each eye and continued under the lores is bare, but the series of peculiar feathers that afterwards make this species conspicuous are represented by spots which appear to be beneath the skin. Although the rectrices extend from their sheaths only to a length of 0·6 inch, there is a clear flush of green upon them, particularly on the ventral surface, in contradistinction to their state in the adult, which shews the green wash more clearly on the dorsal surface

owing to the arrangement of the lateral parts of the webs. The nasal groove occupies nearly one half of the length of the mandible (0·35 inch), just as it does in the adult (0·6 inch) ; the feet are bluish, more so than in the adult.

Specimen A.—The peculiarity is here a faint flush of olive-green upon the lower breast and abdomen. Even though the parent of C, it still retains the colour indicative of youth ; moreover, the youth of this particular specimen is evidenced by faint yellow on the breast and abdomen.

This bird was tolerably numerous upon the sand-plains, which are richly decorated at the above time of year with a great variety of blossoms and teem with honey-laden shrubs, herbs, and *Banksia*-trees.

36. *PTILOTIS SONORA*. Singing Honey-eater. (Hall's Key, p. 41.)

One adult male. 27.10.99. Geraldton.

An orchid owner spoke of this species as quite a grape-stealer ; but such a failing is not confined to the western bird alone, as a similar statement has been made in the eastern colonies.

37. *PTILOTIS LEILAVALENSIS*. Lesser White-plumed Honey-eater. (Hall's Key, p. 43.)

		Wing.	Tail.	Bill.	Tarsus.
		in.	in.	in.	in.
A. Ad. ♂.	27.10.99. Geraldton...	2·9	2·65	0·5	0·8
B. Ad. ♂.	14.10.99. „ ...	3·05	2·85	0·5	0·8
C. Ad. ♂.	27.10.99. „ ...	3·1	3·0	0·5	0·8
	Average	3·01	2·83	0·5	0·8
	Average of six skins of <i>P. penicillata</i> .	3·19	3·13	0·43	0·8

In these specimens the black at the base of the post-auricular patch is variable in position. A nest found at Geraldton on Oct. 29th contained two unfledged young. Exteriorly it was formed of the filament-bearing seeds of *Clematis* and interiorly of white horsehair. Eggs collected for me by Mr. Douglas Darling at Geraldton agree tolerably well with the description given by Mr. A. J. Campbell in the Vict. Nat. vol. xvi. p. 87.

38. *PTILOTIS ORNATA*. Yellow-plumed Honey-eater.
(Hall's Key, p. 43.)

Four ad. sk. Katanning. Oct. 4th to 7th, 1899.

One of these skins shews a uniform grey head and under tail-coverts broadly marked upon the mid-rib in lanceolate fashion ; apart from this it resembles the others.

One mile from the city of Perth a cup-like nest was found hanging from two slender twigs of a Eucalypt some twenty feet from the ground (9.11.99). It was made of wiry green grass and was slightly ornamented with spiders' webs. The lining was composed of "palm wool" (*Macrozamia*), which is gathered by settlers to make head-rests for sleeping purposes. External diameter of nest 2·5 inches, internal diameter 2·1, depth of cavity 2.

The bird insisted upon staying on its nest until the limb to which it was attached fell upon a branch below, and it was frightened away by my hands.

39. *MELIORNIS LONGIROSTRIS*. Long-billed Honey-eater.
(Hall's Key, p. 43.)

A. Ad. ♂ .	26.9.99.	} Tor Bay, Albany.
B. Ad. ♂ .	29.9.99.	
C. Ad. ♀ .	29.9.99.	
D. Imm.	26.9.99.	

This bird is merely a western subspecies and so much resembles the eastern species *M. novæ-hollandiæ* that to determine to which form an individual belongs in an intermediate country such as South Australia will probably be extremely difficult. I agree with Dr. Ramsay* that Gould's account of the bill will be of no assistance in the case of the subspecies ; but I also notice that in my adult specimens the cheek-feathers are "a little longer, form a more ovate patch, and are slightly hair-like." The culmen measures 0·75 inch, 0·75, 0·85.

Description of an immature bird (D).—Forehead and crown brownish black ; nape blackish brown ; back similar to that of the adult ; the stripe retreating from above the eye whitish ; cheek-tufts and hair-like feathers upon the neck dirty white ;

* 'Tabular List of Australian Birds,' Notes, p. 12 (1888).

basal two-thirds of lower mandible flesh-coloured. Culmen 0.7 inch. In other respects similar to the adult.

40. *MANORHINA FLAVIGULA*. Yellow-throated Minah. (Hall's Key, p. 44.)

To identify three clutches of eggs found on Oct. 4th, an adult specimen was shot. Length of wing 4.95 inches. One nest was placed in a *Hakea* some five feet from the ground and another in a *Eucalypt* twenty feet high. The fabric has the same appearance as an eastern example, being 3.5 inches in external diameter, 2.5 in internal diameter, and 2 deep (cavity).

41. *ACANTHOCHÆRA CARUNCULATA*. Red-wattle Bird. (Hall's Key, p. 44.)

Sk. ad. ♀. 4.10.99. Katanning.

A nest with two fresh eggs contained also one of *Cuculus pallidus* (Oct. 4th). Outwardly the structure was assimilated in appearance to the supporting tree, being made of acacia ("jam") twigs. The middle layer was of grass and the lining of sheep's wool, particularly thick at the bottom. External diameter 6 inches, internal diameter 3, depth of bowl 1.5.

42. *PARDALOTUS ORNATUS*. Striated Pardalote. (Hall's Key, p. 46.)

One ad. sk. 4.10.99. Katanning. (Yellow specula.)

I secured a specimen of a Pardalote to determine the species and concluded that it was *P. affinis*. Upon re-examination at home I was very much surprised to find the wings marked with white as in *P. ornatus*, while the bold specula were yellow. This constituted a phase not hitherto recorded, as *P. ornatus* is only known to assume the scarlet tipping. If the subspecies *P. assimilis* is allowed to have so wide a range in the colouring of the speculum as scarlet, crimson, orange, or yellow, the same may be the case here. I feel disposed to consider it merely a matter of time to discover that birds with the scarlet and lemon specula exist in one or more areas of the continent; and then the species will be placed on the same footing as the subspecies as regards the speculum.

As for the species *P. affinis* (always yellow-tipped), I believe it to be only a phase of the subspecies *P. assimilis*. On a previous occasion * I proved *P. assimilis* to have only the third quill edged with white (scarlet speculum), and the speculum may be yellow just as in the "third and fourth quill" phase. If this is really so, and I see no reason to the contrary, there is nothing to distinguish it from *P. affinis*. Proof will doubtless be forthcoming in support of my view, as specimens come in from time to time, even if the delay is as long as in the finding of the specimen under review. I shall then place *P. affinis* along with *P. assimilis*.

43. CHERAMŒCA LEUCOSTERNUM. Black-and-White Swallow. (Hall's Key, p. 47.)

I identified this species from one specimen obtained at Geraldton, 14.10.99. A second example was nesting in a sand-bank and incubating four eggs.

To others as well as myself it is surprising that this short-legged and small-billed bird should be so fond of burrowing. Apparently feebly formed, its bill must perform a movement similar to that noticed in certain Picarian birds that also tunnel. In one cliff-side a pair of Swallows had made five "caves" six inches apart in a line. The first in order penetrated some three inches into the firm sandy soil, while the others were each successively a little deeper, and the last was nearing completion.

44. PETROCHELIDON NIGRICANS. Tree-Martin. (Hall's Key, p. 47.)

One skin was procured at Denmark on Nov. 3rd. This species was nesting freely in the hollows of very high dead timber. I had to wait twenty minutes before a bird came low enough to be killed with small-sized shot.

45. ANTHUS AUSTRALIS. Pipit. (Hall's Key, p. 47.)

A. Sk. ad. ♂. 27.10.99. }
B. Sk. imm. 29.10.99. } Geraldton,

My attention was particularly drawn to the colouring in

* Proc. Linn. Soc. N. S. Wales, vol. xxiv. p. 472 (1899).

specimen A and slightly to that in B. So dense and so uniform was the "pale" rufous in A (exceptions to follow) that I concluded this individual to be either an abnormal form or that Dr. Sharpe was wrong in his remark that "Tasmanian birds are more rufous than mainland ones." I possess very rufous skins from Warragul in Victoria, Nannine, and Geraldton; in addition to which specimen A is so rufous that the ordinarily white feathers of the tail and the white throat are both rufous white.

Gould has remarked upon the possibility of the rufous colour relating to the moult. My specimen (A) is a bird in much-worn plumage. It has been thought also that the rufous may indicate the young. I have a nestling that is more rufous and black than a young bird; but again I have a young bird that is more rufous than a nestling; while I possess two adults, from Victoria and West Australia respectively, one of which is particularly rufous, while the other is almost absolutely so. The absence of dates in the case of the British Museum specimens has prevented Dr. Sharpe from following out the sequence of plumages*.

46. ARTAMUS MELANOPS. Black-faced Wood-Swallow.
(Hall's Key, p. 48.)

- | | | |
|---------------|-----------|---------------|
| A. Sk. juv. | 14.10.99. | } Geraldton. |
| B. Sk. ad. ♂. | 16.10.99. | |
| C. Sk. ad. | 14.10.99. | |
| D. Sk. ad. ♀. | 3.9.99. | Nannine, Cue. |

The length of the wing of the young bird is 4·95 inches, while in the adults it is 4·6, 4·75, and 5·2 inches respectively, shewing specimen A to have a longer wing than B or C. The brownish-white markings of the wing-tips of the juvenile are broad in comparison with those of the adult D, while specimens B and C are intermediate in this respect. D is very much lighter in colour than the others and causes confusion with the questionable species *A. cinereus* Vieill.

* In my material there are two phases. Among the specimens of the South Australian Museum there is a rufous skin, as well as one in sooty plumage, heavily blotched with black. This seems to imply that the species is trimorphic.

In A, B, and C the under tail-coverts are not narrowly edged with white; those of D are clearly so.

Description of A (young).—Shafts of head- and neck-feathers fulvous, giving a light-brown appearance; upon the slate-grey of the back are a few feathers deeply edged with fulvous; rump brownish black, with small brown edgings to feathers; tail much as in adult; wings slate-grey, tipped with dirty white, the outer webs darker than the inner; a few of the upper coverts edged with fulvous; chin and lores black; throat grey; chest, breast, and abdomen sooty grey; under tail-coverts black; under wings silvery grey, coverts white.

So thoroughly insectivorous is this species, in common with others of its genus, that in search of insects it dips its bill into the corollæ of flowers and brings it out covered with pollen, which makes the black chin and forehead appear yellow. It is thus an effective agent in the process of cross-fertilization.

47. *ZONÆGINTHUS OCULATUS*. Red-eared Finch. (Hall's Key, p. 49.)

Two ad. sk. Sept. 27th, Oct. 2nd. Denmark.

At Tor Bay I observed this Finch building a nest, from which, four days later, I took two fresh eggs. Both eggs and nest are what Australians call "typical Finches'." A *Banksia* situated amongst "black boys" (*Xanthorrhœa*) was utilized for the nest, a good look out being thus ensured over an acre or two of ground.

So far as I saw, the south-west corner of Australia did not appear to contain many Finches, and they were represented by one species only. Only two out of twenty Australian species are found in West Australia, one of which I do not think would care to live in the moist climate of the south-west. The resident form is the "red-eared," which seems to me to act in the south-west the part that the "red-browed" species plays in the south-east, most of each district being damp and wild.

48. *PODARGUS PHALÆNOIDES*. Freckled Frog-mouth. (Hall's Key, p. 55.)

Fledgling, sk. 28.10.99. Geraldton.

Description of fledgling.—There were two specimens in

the nest, of which this was the larger. Upper surface grey with conspicuous black shaft-lines; a faint wash of pale red upon the scapulars and upper surface of tail; freckling of adult faintly represented; upper tail-coverts brown, white-tipped, and with the barbules free; wings much like those of the adult, but without rufous, which is represented by a pale flush of pink. Whole under surface brownish grey, all the feathers below the chest being without barbules; throat- and chest-feathers with distinct shaft-streaks; breast with faint shaft-streaks; abdomen faintly rayed, edges of feathers grey; under tail-coverts with dark centres and grey tips; iris yellow. Total length 10 inches, wing 4·9, tarsus 0·85, mid-toe without claw 1·15.

In the British Museum Catalogue I find that Mr. Hartert gives no description of the male in the absence of an authenticated skin, nor do I know of any. It so happens that, while on a visit to Europe, Mr. Dudley Le Souëf asked Mr. Hartert to identify a certain skin for him, which proved to be *P. phalænoides*. Being the skin of a male from Cardwell, Queensland, I may note its leading characters as follows:—

Description of an adult male.—There is much rufous freckling and vermiculation, but no decidedly uniform rufous tint. The whole upper surface is mainly grey, each feather being narrowly streaked with black on the shaft-line. The rufous freckling is fine and heavy. There is a large amount of white freckling on the wings, particularly towards the scapulars. The feathers of the under surface are covered with rufous vermiculations, above and below which are white patches that are much larger; these do not appear on the throat otherwise than as fine marks; the brown shaft-lines are conspicuous. In other respects the skin corresponds with that of the female described in the Catalogue. Total length 15·5 inches, wing 8·5, tail 7·1, bill from angle of mouth 2·25, tarsus 0·95, mid-toe without claw 1·3.

The fledgling when placed upon a bough instinctively assumed the pose of the parent, although it was never before out of the nest. After a certain amount of handling, this posture, obtained by inheritance alone, was no longer retained, the bird's pose becoming limp. The experience of

the western boy is very much that of the eastern when this bird is seen for the first time, judging by the remark he makes: "Look at the Wattle-bird's nest on which some one has thrown a piece of bark." As the "bark" moves the true state of affairs becomes apparent: it is a Frog-mouth upon it. Mimicry of wood and bark is a distinctly protective act.

Two nests observed (13.10.99) were composed of a meagre number of short twigs with a few lanceolate green leaves upon each cluster, while both were upon horizontal forks. Breadth of nest 8 inches by 5; there was but a slight depression: it was placed in a *Banksia*, 8 feet from the ground. The young faced the wind and the nesting parent had to be almost pushed away.

49. HALCYON PYRRHOPYGIUS. Red-backed Kingfisher.
(Hall's Key, p. 57.)

A. Sk. ad. ♂. } 27.10.99. Geraldton.
B. Nestlings. }

The appearance of the nestlings, which are but a few days old, is surprising. A mass of highly refractive and pale silvery-blue quills, that are exceedingly long, makes them appear very different to young birds in general. These quills shew no barbs and each feather is still within its sheath, in which the barbules are feebly developed. The quills of the whole ventral surface are silvery white, less so on the throat. The quills of the head are fine, imbricated, and silvery in appearance. The quills of the wings and back are pale silvery blue. The tail-quills are deep blue for the partly exposed basal two-thirds; silvery blue for the terminal third. The upper tail-coverts are also in the quill stage, being white with a rufous tint upon them, as if to indicate the coming rufous coverts proper. Beginning at the interscapulum, passing along the spinal tract, and ending below the rump is a series of nut-brown quills that indicate the future area of chestnut feathers. The tip of the beak is pink like the lower mandible, which has a subterminal black band. Both tips are sharply decurved (in each specimen), as if the bird

once needed them bent to hold its food better. Length of wing of nestling 2·5 inches (no exposed feather), of adult 2·75. Lengths of quills :—back 1·25, primary 1·5, primary-covert 0·35, tail 1. One of these nestlings shews three quills bursting on one flank. The rupture is taking place at 0·3 inch from the distal end, and from that point the sheath must be worked away, unsplit. I found that this nestling, like the adult, had a marked vitality and resisted death for a long time.

While wandering along a dry creek near Geraldton my eye was attracted by a patch of white against the cliff. I found it to mark a nest of this species some ten feet above the watercourse, having its entrance two inches broad by one inch high. Thence for a space of fifteen inches downwards was a strong line of carbonate of lime as broad as the entrance to the nest. While I was surveying the nest the owners kept flying to and fro. The bowl of the chamber, which is not lofty (1·5 inch), is 7 inches across. The stench from the nest indicated that it had been occupied annually for years, and Diptera (blow-flies) had deposited in the tunnel larvæ which were five inches long and had riddled the guano. The young, I should say, excrete the waste material in a given direction and that against the light, which means along the tunnel. In passing backwards and forwards through this unsanitary channel the parents get the throat, breast, and end of the tail clotted. The young, at the period above described, flick their tails when they are handled, just as the parents do, shewing early an inherited tendency. The young have powerful voices, sounding like the noise of a grindstone at work, to which a jerk is regularly given during each revolution. Every few revolutions a special effort is made by the bird, causing a sound as if spasmodic pressure had been applied to the handle of the stone.

There were four young in the nest.

50. HALCYON SANCTUS. Sacred Kingfisher. (Hall's Key, p. 57.)

One sk. ad. ♀. 27.10.99. Long Island, Pelsart Group, Houtman's Abrolhos.

No particular note upon the skin is necessary. Special interest, however, attaches to the distribution, because hitherto no mention has been made of the bird as inhabiting this set of coral islands. It is fond of exploring, and finds its way to a vast number of spots off the mainland. How it now fares on this treeless island (about 7 miles long) is easily demonstrated, because it had chosen the only possible spot to breed in, viz. an abandoned jetty, amongst the planks of which a pair of birds were going in and out. There is brackish water about three miles away, while thousands of lizards are to be had almost anywhere.

51. CUCULUS PALLIDUS. Pallid Cuckoo. (Hall's Key, p. 58.)

I procured a young bird at Katanning, 5.10.99, also an egg in a nest of the Red-wattle Bird. The immature bird still retains fledgling feathers on the forehead and sparsely on the chest. The upper tail-coverts are clear grey. I noticed many young birds on the wing at Geraldton on Oct. 29th, shewing olive round the eye instead of clear yellow. I handled an adult bird in the flesh near Albany on Sept. 27th.

52. CACOMANTIS FLABELLIFORMIS. Fan-tailed Cuckoo. (Hall's Key, p. 58.)

A. Sk. imm. ♂. 16.10.99. Geraldton.

B. Sk. nestling. 3.11.99. Denmark.

Specimen A.—Brown above, except the tail-coverts, with faint cross-bars appearing as if beneath the surface; upper tail-coverts—the first part of the bird to shew signs of maturity—bluish, the two central feathers of the tail “notched” on the outer web with rufous; the external quills of the tail “notched” on the proximal ends, with white on the outer web and rufous on the distal ends of the same quills and same webs; the middle quills of the tail shew more rufous than white on the outer webs; the breast is more crenately marked than the back; the under tail-coverts are pale brown.

Specimen B.—Nearly ready to fly; the last of the quills

about to burst along the back in a line from the neck to the rump; abdomen not feathered; under surface of feet rich yellow, upper surface slate-coloured; eyes dark brown. Wing 2.55 inches.

The nestling had gradually enlarged the entrance to the nest with its bulky form. It fiercely attacked my fingers when taking it out.

53. *CHALCOCOCCYX BASALIS*. Narrow-billed Bronze Cuckoo. (Hall's Key, p. 59.)

One female. 14.10.99. Geraldton.

This species was recorded in the 'Victorian Naturalist,' vol. xv. p. 145, as new to Western Australia, on the strength of the discovery of the egg. The finding of the bird there makes the statement more certain.

54. *GLOSSOPSITTACUS PORPHYROCEPHALUS*. Purple-crowned Lorikeet. (Hall's Key, p. 61.)

Adult. 29.9.99. Tor Bay, Albany.

55. *CALYPTORHYNCHUS BAUDINI*. White-tailed Cockatoo. (Hall's Key, p. 61.)

One male. 30.9.99. Tor Bay, Albany.

Although this country is suitable for the Black Cockatoo I saw only occasional individuals, while the Red-tailed species came regularly to lodge for the night in a certain area. For three days I camped within fifty yards of a nest of *C. baudini* and could see the birds pass in and out of their home, which was situated high up in a dead Karri gum. A nest was secured later, in the Stirling Range, with two eggs.

56. *PLATYCERCUS ICTEROTIS*. Yellow-cheeked Parrakeet. (Hall's Key, p. 65.)

A. Sk. ad. ♂. }
B. Sk. imm. ♂. } 1.10.99. Tor Bay, Albany.

C. Sk. imm. 27.9.99. Denmark River.

The young birds vary considerably between green and red, and, as in the case of the eastern Rosella, it is some two or three years before the adult plumage is gained. Specimen B shews more green than red along the ventral surface, while C

shews more red than green. The handsome western Rosella and *Barnardius semitorquatus* are the two resident Parrots of the district.

57. PORPHYROCEPHALUS SPURIUS. Red-capped Parrakeet. (Hall's Key, p. 65.)

Sk. imm. ♀. 28.9.99. Tor Bay, Albany.

In the 'Records of the Australian Museum,' Cat. Bds. p. 68 (1891), Dr. Ramsay writes:—"Fem. Similar to the male, very little smaller, but slightly duller in colours. Young (one skin). Similar to adult, but having all the colours of duller tints, &c."

Gould (Handbook Bds. Austr. vol. i. p. 61) speaks of the young during the first year of their existence as being of a nearly uniform green colour; nevertheless the hues which characterize the adult bird are perceptible at almost any age.

The skin which I obtained is radically different, and suggests youth; yet it is that of a breeding bird, first to judge by its worn tail-feathers, and secondly by the fact that for days it accompanied a highly coloured (male?) bird in a quiet forest. It was probably a young individual which had bred early. The following is the description of it:—

Immature specimen.—Head yellowish green; cheeks lighter; faint flush of red on the brownish lores; back and scapulars like head; rump greenish yellow; throat, fore-neck, and chest smutty brown, without any trace of violet; breast, flanks, and abdomen purple-blue; wing-coverts bluish green; band across under portion of wing pale lemon-coloured. The worn tail shews scarcely any white. The bill has the posterior two-thirds dull blue, the anterior third whitish.

An adult skin obtained by exchange shews the lores to be bright red (not dusky red). It appears to be that of a well-matured bird.

58. BARNARDIUS SEMITORQUATUS. Yellow-collared Parrakeet. (Hall's Key, p. 66.)

Sk. ad. ♂ & ♀. 26.9.99. Denmark.

A favourite haunt of many individuals of this species was

near the feeding-boxes of the horses at Messrs. Millers' saw-mill. If disturbed they would only fly into the lower branches of adjacent trees and soon alight again.

59. PHAPS ELEGANS. Brush Bronze-wing Pigeon. (Hall's Key, p. 71.)

Sk. young. 18.10.99. Pigeon Island, Wallabi Group, Houtman's Abrolhos.

Pigeon Island is a small treeless area, some ten acres in extent, with shrubs from three to four feet high. It is adjacent to other members of the group that are well able to stock it with the pair of birds which probably gave it a name. This species lies so close that it is difficult to say how many individuals are present. On my visit I saw only one until I traced it to a bush, under which I found a young bird, which allowed me to place my hand upon it. The parent after some moments' deliberation flew away. Both Mr. Campbell and Mr. Helms refer to *P. chalcoptera* as being found on the island, but I did not see it. This species has not been previously noticed as found upon the group.

The query of Mr. Helms, as well as that of Mr. Beddoes*, regarding the nesting of the species in the island, if *P. elegans* is intended, can now be considered settled, because the latter gentleman has noticed the Pigeon on the group at all times of the year and I have brought away with me a skin of a young bird that had very recently left the nest.

60. ÆGIALITIS MELANOPS. Black-fronted Dotterel. (Hall's Key, p. 83.)

A young bird. 27.10.99. Geraldton.

The scapulars and lesser wing-coverts have chestnut and not maroon tips; the forehead is much lighter than the crown, which is brown; there is no band on the fore-neck.

61. HYDROPROGNE CASPIA. Caspian Tern. (Hall's Key, p. 88.)

A. Young, about to break shell.

B. Fledgling. Houtman's Abrolhos.

* 'Producers' Gazette & Settlers' Record of Western Australia,' vol. v. pt. 6, p. 431.

The bill of specimen A, while in the shell at the stage noted, was vermilion-red, but of a paler shade than in the adult.

It seems to be generally understood that this species is solitary while nesting; but this is not always so, because, immediately above highwater-mark on a sandy point, I found some thirteen pairs incubating. Most of the nests had two eggs for the complement, others had only one. The parents rose in a flock when approached and soared overhead, uttering their guttural note repeatedly at long intervals.

But though the birds on the West Wallabi Islands of the Houtman's Abrolhos were nesting together (20.10.99), others were leading a solitary life upon the smaller islets. On Square Island, of the Pelsart Group of the Abrolhos, I observed two eggs (17.10.99) upon the coral-sand, without any pretence of a nest beyond an indentation in the ground.

The members of the Wallabi Island colony (western end) had gathered together a few twigs in a small number of cases; and as these primitive nests were close to salt-bushes (*Salsolaceæ*), I take it that the twigs were from those bushes. So much were the bulk of these eggs like those of the Gull (*Gabianus pacificus*) that I should have been quite unable to identify them had the owners themselves not assisted me, and had it not been for the chicks within the eggs having vermilion-red beaks.

To identify the two eggs on the Pelsart Group was not so easy, because a pair of Terns and a pair of Gulls were present together. The Gulls made no noise, while the Terns did, occasionally passing high overhead, but shewing no signs of ownership of the nests. On taking up the eggs and leaving the beach in the boat's dingey, I was satisfied when I saw one "Caspian" descend upon the place where these valuable eggs should have been. My fear that they would not be identified was thus satisfactorily dismissed. The note of the bird in the night reminded me of the smaller Penguins in southern waters.

Nestling.—Bill coral-red, with a subterminal black band; legs and feet brownish orange. Otherwise as described in the British Museum Catalogue.

62. STERNA DOUGALLI. Roseate Tern. (Hall's Key, p. 88.)

Sk.ad. ♂. 26.10.99. Pelsart Group, Houtman's Abrolhos.

This species was always seen in small companies, and although I tried diligently to find it incubating, it appeared to be waiting for November. Mr. Beddoes speaks of April, June, November, and December as the months for nesting.

63. STERNA BERGII. Crested Tern. (Hall's Key, p. 88.)

A nestling and an adult were secured on Square Island, of the Pelsart Group of the Houtman's Abrolhos. The nestling, though quite young, attempted to swim a considerable distance and had to be shot.

Nestling.—The description agrees with that of Mr. Saunders (Brit. Mus. Cat.), excepting that the upper part of the feet and tarsi are slate-coloured, the under portion of the feet ochreous.

This islet, of some three acres in extent, is flat and sandy, a small part being covered with salt-bush. On it a score of pairs of the Terns had just hatched out their young, and the little birds, from a week to a fortnight old, were hiding or attempting to hide under bushes or running away terror-stricken. Amongst them an Osprey had its nest and young.

64. STERNA FULIGINOSA. Sooty Tern. (Hall's Key, p. 89.)

Sk.ad. ♀. Rat Island, Easter Group, Houtman's Abrolhos. 17.10.99.

Our cutter-yacht, the 'Wanda,' sailed into an anchorage off Rat Island on the afternoon of a fine day. We immediately walked a few hundred yards along the beach to a "rookery" that contained some 2000 Sooty Terns, each of which had deposited or was depositing its single egg under a salt-bush. The *Salsolaceæ*, from two to three feet high and close together, occupy most of the island, which is about three miles long. Through them we "quietly" crashed, and so disturbed the birds which we passed that they scrambled out and did not feel at ease until they had with difficulty risen upon the wing. At least a thousand of them must have been

whirling immediately above us, with many others still higher in the air. Noticing the latter, it is evident in a moment that they soar easily; for in such a position they will sustain their flight for many minutes together with no apparent flapping of the wings. The wheeling is either upwards or downwards, but mostly in the latter direction. Croaking emanates principally from the birds in the "rookery," screeching from those above, and the cry of "wide-a-wake" from a few in the distance. All three sounds may be heard aloft.

At the further end of the island was another "rookery" of like proportions. The opening day of the laying-season meant that the birds' evening fishing-excursion was abandoned. As the sun was setting, at 6.45 P.M., they were as active and noisy as during the other hours of the day. At 9.30 the din was just as strong, and before daylight the babel was still much the same. The fishermen told me that on this first night no birds sleep. The whole island is flat and untimbered, and the two compact "rookeries" severally occupy a few acres as far away from each other as the length of the island permits. Apart from the breeding-months the "Wide-a-wake" is not to be seen on these islands during daylight, but Mr. Beddoes says that it may be heard overhead in the night. That gentleman further told me that when nesting is concluded all the birds leave together or at about the same time, meaning that within three days the whole three thousand comprised in each "rookery" move away to sea. The young are daily trained to go further from land and to remain longer absent, the instruction and encouragement occupying three or four weeks. While the "Sooties" are breeding upon the ground, the "Noddies" are nesting upon the bushes some two or three feet above it; and when some of the eggs are exchanged the birds make no objection, but "sit on." The "Noddies" will hatch out the "Sooty's" eggs and feed the young until they are ready to run about, but no longer. The old "Noddy" is a quiet unassuming bird, and certainly does not like the noise of the young "Sooty," which is "a chip of the old block." So pugnacious is the latter species

that sheep are kept at bay by it. Not so with the "Noddy." I found the "Sooty" a very plucky bird, while the "Noddy" was not in any way pugilistic (facts reversed in Mr. Helms's paper); and this shews how nicely the nesting-habits are accommodated to each, when the sensitive bird places its nest on a bush and the "fighter" lays its egg on the ground. When the young birds are ready to essay a flight they waddle through the bushes to the beach: cripples must needs remain. In the "rookeries" I saw only one abnormal bird: it had the hinder crown and neck mottled, and the mantle looking as if dusted with flour. It could not have been hatched that season, and would be abnormal in any case.

I observed a thousand eggs in the "rookery," from which the birds moved or over which they stood according to circumstances. The crash of the waves on the barrier coral-reef could not be heard above the sounds of feathered life. If three or four people continue to trample through their nesting-ground the sitting birds rush about in a mad paroxysm of fear, scrambling under, over, or through the maze of twigs until they either sink exhausted, frightened into momentary quiet, or gain the air, which to them is home. The egg-laying day is to them surely the most anxious of the year; and the croaking sound of two thousand voices, or say six hundred at a time, ten times stronger than that of two hundred ordinary frogs, from the throats of myriads of birds in close wheeling flight, is truly wonderful. Never have I experienced such a sensation of the marvellous as when I heard that extraordinary din of bird-voices.

The nest is simply a depression in the sand, with a few twigs or empty mollusk-shells scratched up round it, and not always that. All the eggs which I saw were upon the ground under the bushes. A few "Noddies," not more than a score, had nests upon the bushes over the others. I had, of course, a splendid opportunity of examining a magnificent series of eggs. Certain fishermen and others had been out collecting those of the first laying (Oct. 20th), for which they eagerly look out. Their visit was to a distant

"rookery" (in which I had previously wandered), and they had taken from a portion of it about eight hundred eggs, leaving some two hundred, and giving the birds the opportunity to lay again undisturbed. The measurements of the eggs do not vary much, and one pattern of marking governs the bulk; in the minority there are differences. I observed:—

(a) Whitish ground, purplish spots appearing as if beneath the surface and purplish-red spots just above it; on the surface conspicuous spots and blotches of a chestnut-umber.

(b) Ground-colour of green, which is rare, the spots being dispersed as in (a).

(c) Dull rufous ground-colour, with varying spots: this is not so rare as (b).

(d) Reddish-white ground-colour, which is not uncommon, the spots varying in size and number.

The following types, attracting the eye at a glance, provided a series of specimens shewing the stages of pigment-influence in passing along the oviduct:—

(1) Quite white, exceptional. Several years ago I received specimens of this kind from Malden Island.

(2) White, with an innermost faint purple layer of spots and blotches. Specimens varying greatly in size.

(3) Similar to (2), but with a second and stronger layer of spots upon the surface.

(4) White ground-colour, with purple and chestnut spots, which are quite uniform; few blotches.

(5) The type described as (a).

(6) The type described as (b).

(7, 8, 9) The type described as (c); the extent of ground-colour, and therefore of the spots, variable, some lightly, some heavily marked.

(10) Similar to (c), with few but heavy blotches.

The second "rookery," at the other end of Rat Island, seemed to contain much the same types of eggs, and remained untouched. This is the only one of these islands which the "Sooty" uses for breeding. Each "rookery" contains some two thousand birds.

65. *ANOUS STOLIDUS*. Noddy. (Hall's Key, p. 89.)

I visited one large "rookery" on Pelsart Island proper, where some two thousand Noddies were assembled (21.10.99). They had not begun to lay their eggs, although it was past the usual date. Mr. Beddoes tells me that this species is the earliest Tern to lay on the Houtman's Abrolhos, and that August 9th is the earliest record which he has of their doing so. The "hovering as bees" only occurs at the initial stage, but it starts again when the young are being taught to fly. The teaching lasts from fourteen to twenty-one days. The young struggle in from the sea at all hours of the day, but the parents arrive *en masse* during the evening. My experience with them was very quiet, because they were assembled in a single colony upon the salt-bushes and upon the bare ground near them. Encouraging some of them to move on simply meant that they rose before us like a cloud such as few people have seen—a mass of quickly-flying bodies in revolution and unmethodical action. Fishermen watch for this sign, and onslaughts upon the eggs soon after follow. It has been observed that by marking off a section of a rookery and taking the eggs, a second and subsequent laying ensues, contrary to what happens if the birds are undisturbed. This season the Noddy had not begun to lay by October 21st, and it was remarked that the sensitive bird had been made more so by the depredations of wild cats, once introduced to subdue the rats. Although the eggs of the two species are externally too much alike to be distinguished from one another, there is a difference in the yolks: that of the Sooty has a deep red yolk, while that of the Noddy has a yellowish one.

Among the four thousand Sooty Terns breeding on Rat Island, 21.10.99, I found only two nests of the Noddy. One was large, and measured eleven inches across, the bowl being 3.5 inches in diameter. It was made of marine weeds, salt-bush twigs, and light filamentous sponges. Both nests were placed on the tops of *Salsolaceæ*, some three feet from the ground, upon which the eggs of the "Sooty" were very numerous.

The day of the vast flocks referred to by Gilbert in Gould's 'Handbook' is past. When guano-workers cease to frequent the islands, and the introduced cats allow the lizards alone to work havoc there, the former state of affairs may return.

66. MICRANOUS TENUIROSTRIS. Lesser Noddy. (Hall's Key, p. 89.)

A, B. Sk. ad. ♀. 17.10.99. Long Island, Pelsart Group, Houtman's Abrolhos.

C, D. Nestlings. 27.10.99. Long Island, Pelsart Group, Houtman's Abrolhos.

On Long Island were two small mangrove-swamps, one with many old nests and a few birds sitting upon eggs, the other containing those of the birds fully engaged in the task of incubation. There were approximately a hundred nests, each containing a fairly fresh egg, on the 17th of October. On the 27th two of the nests contained young some three days old.

Description of nestling.—The young at once assumes a likeness to the parent: the edges of the upper and lower eyelids are bordered by a line of white down; the under wing is whitish; the forehead, nape, and crown are covered with clear greyish-white down, the cheeks being less distinctly white; the bill and eyes are black; the nail of the bill is pure white; the legs and feet are brownish black.

In the adult skins secured, the third and fourth primaries (from the outside) give equal measurements.

Nest.—The material from which to choose for a nest is limited, consisting only of a few land-weeds (salt-bush or occasional herb) and a marine weed or two. The former would not suit the manner in which the loose material is placed, hanging from so poor a support—a basis that is not broad enough to hold stems that are not interwoven. As the bird does not care to adopt the practice of nesting on the ground, it is scarcely optional to use aught but seaweed, to withstand the wind. *Rhodophyceæ* are chosen from the beach, and, being fascicular, they hold together when placed on an irregular fork. How the season affects the gathering

of red weeds and the laying of eggs it would be interesting to know. Very little skill is necessary to obtain a pleasant effect in nest-building among mangroves. The cluster of weeds which form the nest measures six inches across and four inches in depth, the bowl being a slight depression of half an inch.

That this "rookery" has been used for two or more years is shown by the guano upon the branches and older portions of the nests. While making observations, a bird flew at me, and brought blood from my lower lip with its bill.

67. *GABIANUS PACIFICUS*. Pacific Gull. (Hall's Key p. 90.)

Fledgling (about seven days old). 27.10.99. Houtman's Abrolhos.

The nest of this species is a slight "mound" lined with salt-bush twigs.

68. *PELAGODROMA MARINA*. White-faced Storm-Petrel. (Hall's Key, p. 91.)

A. Sk. ad. ♂. 26.10.99. South Island, Pelsart Group. Houtman's Abrolhos.

B. Nestling. 20.10.99. West Wallabi Island. Houtman's Abrolhos.

Nestling.—Except the chin and throat, the whole under surface is covered with a sooty-grey down averaging more than an inch in length. The down has fallen from the upper surface, excepting the crown and rump. The back is deeper slate-coloured than in the adult, and the wings, which are almost free from down, are of the same colour; the hind-neck is mottled with white; the face is deep slate-coloured; the lores white with dark tips; the chin, throat, and cheeks white; the feet slate-coloured, with a very light yellow mark between the toes; the bill is dark. The bulk appears to be twice that of the adult. Girth of nestling at shoulders 10·5 inches; of adult 4·5 inches.

One nestling, well advanced, I found lying dead above the entrance to a burrow and externally uninjured, 24.10.99.

Eggs were found on South Island, Pelsart Group, 26.10.99, fresh and much incubated. The male was observed to be sitting in the daytime. In the course of an hour I was able to roughly examine from six to nine nests, and accomplished the excavation in the loose sand, bound with fibrous vegetation, by hand alone. Many birds were in the hollows, apparently not specially engaged, but keeping apart from their mates while sitting upon the eggs. This is not usual.

69. *PUFFINUS CHLORORHYNCHUS*. Wedge-tailed Petrel.
(Hall's Key, p. 92.)

From the West Wallabi Island of the Houtman's I procured, in a burrow, a male specimen, in order to ascertain the author of the moaning calls that came from the holes in the daylight. These were quite new to my ears, and did not resemble those of any Petrel in the other large "rookeries" which I have been fortunate enough to visit. During the night these calls would prove quite distressing to a person not knowing the source. My first acquaintance with them was in the daylight, and I felt impelled to make a kind of response, because I thought that some creature was in distress. At first I could only refer the noise to the cats which are wild in the adjacent group. Lying at anchor that calm night I was considerably impressed by what a superstitious person would certainly have called the feeling that an "island" was in distress and moaning in its troubles: circumstances altogether too dismal for an optimist to be within hearing of. My mind was, however, bent upon hard facts, and for the moment was unemotional.

Although my specimen agrees with the measurements noted by Salvin, the colour of the bill does not correspond with the specific nomenclature, because it is slate-coloured with the tip (nail) black; the feet are fleshy white.

Young "Mutton-birds" are very pugnacious, for if two are placed in the same box overnight, one will be found dead in the morning. This surely comes of being "brought up" alone in a burrow. The statement applies also to other species of Petrels.

APPENDIX.

Revised List of the Birds found on the Houtman's Abrolhos,
and their Nesting-dates.

PAGE IN 'KEY.'	SPECIES.	NESTING DATES, &C.
3.	<i>Haliaeetus leucogaster</i> Gmelin.	Fledged young in nest, 20.10. 99. Wallabi Group.
28.	<i>Pandion leucocephalus</i> Gould.	Eggs, Sept. and 26.10.99. Young plentiful in October.
93.	<i>Petræca goodenovii</i> Vig. & Horsf.	Considered a "stray."
205.	<i>Sericornis maculata</i> Gould.	Deserted nest of this season, 20.10.99. West Wallabi Island.
231.	<i>Cinclorhamphus rufescens</i> Vig. & Horsf.	Possibly nesting on Long Island, Pelsart Group.
303.	<i>Zosterops gouldi</i> Bonaparte.	Fresh eggs, 21.10.99, 23.11.94. Wallabi Group.
385.	<i>Hirundo neoxena</i> Gould.	Considered a visitor.
390.	<i>Anthus australis</i> Vig. & Horsf.	
452.	<i>Halcyon sanctus</i> Vig. & Horsf.	Appeared to be nesting on Pelsart, 27.10.99. (One pair.)
550.	<i>Phaps chalcoptera</i> Latham.	Doubtful habitat. (See No. 59.)
551.	<i>Phaps elegans</i> Temm.	Young just out of nest, 21. 10.99. Wallabi Group.
571.	<i>Turnix varia</i> Lath.	Fresh eggs, 20.10.99. Wal- labi Group.
577.	<i>Hypotaenidia philippinensis</i> Linn.	Known to breed on Pelsart Islands.
584.	<i>Porzana tabuensis</i> Gmelin.	Possibly nesting on islet off Wallabi Group and Pelsart Islands.
600.	<i>Arenaria interpres</i> Linn.	
601.	<i>Hematopus longirostris</i> Vieill.	
602.	<i>H. unicolor</i> Wagler.	Fresh eggs, 24.11.94.
607.	<i>Squatarola helvetica</i> Linn.	
614.	<i>Ægialitis ruficapilla</i> Temm.	Young accompanying parents, 26.10.99.
621.	<i>Numenius cyanopus</i> Vieill.	
622.	<i>N. variegatus</i> Salvadori.	
624.	<i>Limosa novæ-zealandiæ</i> Gray.	

PAGE IN 'KEY.'	SPECIES.	NESTING DATES, &c.
628.	<i>Heteractitis brevipes</i> Pallas.	
631.	<i>Glottis nebularius</i> Gunner.	
633.	<i>Limonites ruficollis</i> Pallas.	
635.	<i>Ancylochilus subarquatus</i> Gmelin.	
644.	<i>Hydroprogne caspia</i> Pallas.	Fresh eggs, 17.10.99; well- developed embryos in eggs, 20.10.99; eggs, 15.12.90 (A. J. Campbell).
645.	<i>Sterna dougalli</i> Mont.	Fresh eggs, 15.11.94; eggs in Dec. 1890.
647.	<i>S. bergii</i> Licht.	Eggs, 17.10.94; young in down, 26.10.99.
649.	<i>S. anæsthesia</i> Scopoli.	Eggs, 23.11.94; embryos well- developed.
650.	<i>S. fuliginosa</i> Gmelin.	Eggs, 6.10.94, 20.10.99; young, 4.11.94.
651.	<i>S. nereis</i> Gould.	Eggs, 3.12.94.
652.	<i>S. sinensis</i> Gmelin.	
655.	<i>Anous stolidus</i> Linn.	Eggs, 6.10.94, 21.10.99. Co- lony not yet started to lay.
656.	<i>Micranous tenuirostris</i> Temm.	Fresh eggs, 17.10.99. Breed- ing-season irregular, Sept. to Dec.
659.	<i>Larus novæ-hollandiæ</i> Steph.	Eggs, 14.10.94; also Sept.
660.	<i>Gabianus pacificus</i> Latham.	Eggs, 7.10.94; also Sept.
666.	<i>Pelagodroma marina</i> Latham.	Fresh eggs and nestlings, 26.10.99; eggs with well- developed embryos, 26.10.99, 10.11.94; nestlings, 15.12.90 (A. J. Campbell).
669.	<i>Puffinus chlororhynchus</i> Less.	Eggs, 26.11.94.
671.	<i>P. assimilis</i> Gould.	Eggs, July. Pelsart Group.
716.	<i>Demiegretta sacra</i> Gmelin.	Eggs, November.
727.	<i>Phalacrocorax hypoleucus</i> Brandt.	Eggs, 9.10.94. Off Gun Island.
736.	<i>Phaethon rubricauda</i> Bodd.	Egg, 10.11.94.
737.	<i>P. lepturus</i> Daudin.	
738.	<i>Pelecanus conspicillatus</i> Temm.	Occasional in Sept. Wal- labi Group.
743.	<i>Eudiptula minor</i> Forst.	
744.	<i>Chenopsis atrata</i> Lath.	
754.	<i>Nettion castaneum</i> Eyton.	

XIV.—*Results of an Ornithological Journey through Colombia and Ecuador.*—Part V. By WALTER GOODFELLOW, F.Z.S.

[Concluded from p. 67.]

Fam. TROCHILIDÆ.

(316-432.)

We devoted special attention to the Humming-birds during our expedition, but almost the entire collection of the members of this family has gone to the U.S. National Museum, Washington, together with copious field-notes relating to them. It is now being worked out there by Mr. Oberholzer, and an account of it will shortly be published containing our notes and results in full, but we may venture to make some general remarks. We obtained examples of what we considered to be about 116 species of this charming group, but the number will probably be much increased when the specimens have been properly worked out. With very few exceptions, all of them were killed with an Indian "*bordaquera*" or blow-pipe, for it would be useless to kill them with a gun, however small the shot was. Consequently all our skins are perfect, and there is hardly one among them that is poor. It is generally supposed that a European cannot acquire the use of a blow-pipe. In one sense this is correct, so far as shooting with darts goes, for then a tube 9 or 10 feet long must be used, which a "European" unaccustomed to it will find very unwieldy. In Popayán, however, we met a young Colombian gentleman who was very proficient in the use of the blow-pipe, and from him we learnt how to cut the Indian tubes down to 5 or 6 feet in length and to use clay pellets instead of poisoned darts. We did this and practised on small birds in the garden, and none were more surprised than ourselves at the rapid progress we made.

We found Humming-birds scarce in Southern Colombia during the time of our visit, whereas in Ecuador at certain altitudes they predominated. If an ornithologist were to visit the Central Cordillera at the back of Popayán I am sure that he would find there a distinctly new species of *Lesbia*. I saw examples of it on several occasions at an altitude of about

9000 feet, but we were not fortunate enough to obtain specimens; for when it would have been possible to have shot them we had no guns with us.

Of some species of this group we killed many more examples than we intended, for the reason that often we could not tell exactly at what species we were shooting. Most of the members of the genus *Eriocnemis*, for example, are very easily confounded on the wing, and in some localities several of the species are found together. It was only by shooting many specimens of *E. luciani* that we occasionally secured one of the rarer *E. mosquera*, which is very different in the hand, but almost impossible to distinguish on the wing. And this is the case with many of the genera. Each of them has its characteristic habits and flight, but in most cases the different species look much the same in life. It is only when a specimen is held in the hand and turned to the light in the right position that the beautiful colours are seen to advantage. The brightest-coloured may look the plainest of birds when on the wing.

Fam. CYPSELIDÆ.

433. CHÆTURA ZONARIS (Shaw).

Two males and one female. We found these Swifts at altitudes of from 10,000 to 15,500 feet, but more frequently at the higher elevation. They fly in flocks in the early morning and evening, skimming close over the grassy slopes of the mountains. Their stomachs contained chiefly small moths. Personally we found them confined to the Eastern Andes, but it is probable that they change their locality at certain seasons and visit the Western Andes. In July we saw numbers of them flying about the ledges of the precipitous "quebradas" east of Quito, where we were told that they nested. The female is more brownish on the head, especially about the forehead, which is whitish brown. The feathers on the vent are also edged with white.

Fam. CAPRIMULGIDÆ.

434. STENOPSIS RUFICERVIX (Scl.).

A male from Papallacta, Eastern Andes (11,000).

Fam. PICIDÆ.

435. *PICUMNUS GRANADENSIS* (Lafr.).

One male from the forests of Santo Domingo.

436. *CAMPOPHILUS MELANOLEUCUS* (Gm.).

A pair from the Coca, Rio Napo. We constantly heard the loud rapping of these birds reverberate through the forests, but could seldom get a shot at them, for the trees were very high, and they always kept out of sight by running to the other side of the trunk. They accompany their rapping with a loud harsh note, to be heard a long distance off.

437. *CAMPOPHILUS POLLENS* (Bp.).

Three males and two females from the western side of Ecuador. We found them on the more open parts of the forest-covered mountain-sides at altitudes of from about 5000 to 7000 feet. They were rather numerous at Canyacota in September.

438. *CAMPOPHILUS GUAYAQUILENSIS* (Less.).

Two males from Santo Domingo. A pair of these Woodpeckers bred in October in the trunk of a tall dead tree standing in the clearing near our hut.

439. *CHLORONERPES FUMIGATUS* (Lafr. & d'Orb.).

A male and a female from the western side of Pichincha.

440. *CHLORONERPES CECILIÆ* (Malh.).

A female from Baeza, Eastern Ecuador, is apparently of this species.

441. *CHLORONERPES NIGRICEPS* (Lafr. & d'Orb.).

A good series from Intag and Baeza, Western and Eastern Ecuador.

442. *CHLORONERPES DIGNUS* ScL. & Salv.

A female from Baeza, Eastern Ecuador.

443. *MELANERPES CRUENTATUS* (Bodd.).

A male and two females from the Rio Suno, Upper Rio Napo. All the three specimens were shot on decayed tree-trunks lying on the ground in a small Indian clearing. The

heads of this and of the next species pass easily through the neck when they are being skinned.

444. *MELANERPES PULCHER* Scl.

Five males and two females from Santo Domingo and near Gualea. At the former locality they were rather numerous, and all those which we shot were eating ripe bananas. I have observed them feeding together with *Procnias tersa*, *Calliste icterocephala* and *C. aurulenta*, *Chlorophanes atricapilla*, and *Cassidix oryzivora*. In a wild state *C. oryzivora* does not appear to be evilly disposed to smaller birds, which is more than can be said of it in captivity.

445. *HYPOXANTHUS RIVOLII* (Boiss.).

Four males and three females from near Quito. I believe that this is the only species of Woodpecker found near that town. All our examples were shot at the little village of Guápalo, in a deep "quebrada" leading into the Chillo Valley, and only twenty minutes ride from Quito.

446. *CELEUS CITREOPYGIUS* Scl. & Salv.

Two males and a female from the Coca, Rio Napo. Shot on the large ants' nests so common on the trunks of forest trees. This Woodpecker has a remarkably strong odour, which the dried skins still partially retain. When first shot its smell was so strong that it made the hut almost unbearable. With care, the skull of this species will pass through the neck when it is being skinned.

Fam. MOMOTIDÆ.

447. *MOMOTUS SUBRUFESCENS* (Scl.).

A male and three females from the Coca, Rio Napo. Fairly numerous on the edges of the forest around the Indians' clearings. They sit so motionless and flat on the branches that they may be easily overlooked.

448. *UROSPATHA MARTII* (Spix).

Three males and a female, also from the Coca, where this species was rather more plentiful than the preceding. It appears to feed largely on grasshoppers and similar insects,

securing them on the wing and returning to a branch to eat them. It takes grasshoppers from the ground without alighting.

449. *PRIONORHYNCHUS PLATYRHYNCHUS* (Leadb.).

Three males and two females from Santo Domingo and the Rio Coca, Western and Eastern Ecuador. This Motmot we always found in the depths of the forest. I can see no difference between examples from the eastern and western sides.

Fam. *ALCEDINIDÆ*.

450. *CERYLE TORQUATA* (Linn.).

Although this large Kingfisher was very common on the Lower Napo, for some reason or another we only shot a female. We did not once observe it so high up as the Coca.

451. *CERYLE AMAZONA* (Lath.).

A female from the Suno, Upper Napo. A pair of these Kingfishers had a nest near the mouth of the Coca in June. One night the river suddenly rose and overflowed its banks, when doubtless the birds perished, for we did not see them again.

452. *CERYLE CABANISI* (Tsch.).

A male from Santo Domingo. Shot on a tree near the edge of the forest, about 200 yards away from the stream.

Fam. *TROGONIDÆ*.

453. *TROGON COLLARIS* Vieill.

Four males from Gualea and Nanegal, Western Ecuador.

454. *TROGON PERSONATUS* Gould.

A large series of males and females from both the Eastern and Western Andes at altitudes of from 9000 to 11,500 feet. Common at Papallacta in February. We found them only on the western side of the Western Andes and on the eastern side of the Eastern ranges; none of the Trogons are found on the central plateau of Ecuador. Probably this species has the highest range of all those found in that country.

455. *TROGON ATRICOLLIS* Vieill.

A male from Gualea, Western Ecuador, and a female from the Coca, Rio Napo.

456. *TROGON VIRIDIS* (Linn.).

A female from the Coca.

457. *TROGON MACRURUS* Gould.

One female from the Coca. The lower mandible and the sides of the upper are dark yellow.

458. *TROGON RAMONIANUS* Bp.

Two males and a female, also from the Coca. Bill greyish horn-coloured in the male, upper mandible of female black.

459. *PHAROMACRUS ANTISIANUS* (d'Orb.).

Two males from Intag, Western Ecuador, and two males from below Baeza, Eastern Ecuador. On the latter side we found the birds feeding in the company of *P. auriceps*.

460. *PHAROMACRUS AURICEPS* (Gould).

We obtained a large series of this Trogon from both Eastern and Western Ecuador at about 4000 feet, but those from the eastern side appear to have the head of a more coppery hue. At San Nicolas we found them on the open hill-sides in the very early morning and in the forests during the day. They feed on the lower trees in the dense parts of the woodland, and in the gloomy light are very difficult to see. When disturbed they fly into the highest trees, out of range, but they are easily brought down to the lower regions again by imitating their loud call-note. Although the feathers of this bird come out in abundance, even with the most careful handling, their skins are not quite so tender as are those of the smaller Trogons, such as *T. personatus*. It is best to let the bodies get quite cold before attempting to skin any species. Local name "Guajaliqui."

Fam. *GALBULIDÆ*.461. *GALBULA MELANOGENIA* ScL.

A female from Santo Domingo. Found in the forests.

462. *GALBULA CHALCOTHORAX* Scl.

Two males and a female from the forests near the Coca. A young male resembles the female, except that it has the under tail-coverts edged with white, like the adult male, and not with fawn. I think that we shot all our specimens on bees' nests.

463. *JACAMEROPS GRANDIS* (Gm.).

We shot three males and a female of this handsome Jacamar near the Coca in June. We met with them only in the forests, where they sit silently on the branches, taking their prey on the wing and returning to the same spot. After they were shot a sticky fluid like honey ran copiously from their beaks. Local name "Quinde rayo" (the Beam-of-light Humming-bird).

Fam. *BUCCONIDÆ*.

464. *BUCCO RADIATUS* Scl.

A male from Santo Domingo. Shot on the dead branch of a tree at the edge of the forest, where it sat perfectly motionless, after the usual manner of these birds. Its stomach contained grasshoppers, beetles, and a small lizard. Iris red. Rare.

465. *BUCCO MACRODACTYLUS* (Spix).

Two males from Archidona and the Coca respectively. The birds come out at dusk and catch moths on the wing.

466. *MALACOPTILA FUSCA* (Gm.).

A female from Archidona. Frequents overgrown clearings. Bill light yellow, with black line down the centre. Iris yellow.

467. *MALACOPTILA CASTANEA* Verr.

A male from the lower western side of Pichincha.

468. *MONASA FLAVIROSTRIS* (Strickl.).

A pair from the Coca. Bill pale lemon-yellow. This Soft-wing was much rarer on the Napo than the two following species.

469. *MONASA PERUANA* Bp.

Two pairs from the Coca. This species was generally seen in the open clearings. Bill coral-red.

470. *MONASA NIGRIFRONS* (Spix).

Four males and two females from the Coca. The commonest of the Soft-wings on the Napo. Generally found in pairs in the forests, sitting silently on the lower branches of high trees; it catches butterflies and other insects on the wing. Bill bright coral-red.

Fam. CUCULIDÆ.

471. *CROTOPHAGA ANI* (Linn.).

Of this widely distributed bird we procured a good series of specimens. They were remarkably abundant in the Cauca Valley, and became quite a nuisance to us when we were shooting, flying on in front of us in large flocks, alighting clumsily on the trees and bushes, and so driving other birds away. They must have been nesting in May, for I took a blue egg out of one which I was skinning. After Popayán we did not see any again until we reached Santo Domingo in Western Ecuador, and Archidona near the headwaters of the Napo, while they were scarce at both these places. Neither of the localities suited their habits. They prefer open grassy country, inhabited by herds of cattle and interspersed with tall hedges and clumps of trees. They are in constant attendance upon the cattle, pecking flies and insects from them. Their flight is short, and their mode of alighting very awkward. When flying they keep up a continual noise. In Colombia they were called "Chamóm," and in Ecuador "Pico machete."

472. *PIAYA MEHLERI* Bp.

We collected a good series of examples of these birds on both sides of Ecuador, and found a striking difference between those from the eastern and western sides. They undoubtedly ought to be divided, but in the Cat. Brit. Mus. they are placed together. Those from Eastern Ecuador have the head and back much darker, and have a deep purple gloss on the upper side of the tail with a blackish-grey tint underneath. The difference

is most marked when the skins are placed side by side. The western bird has the bill yellow with a greenish base and the bare skin around the eyes greenish yellow; while the eastern bird has the base of the bill *blackish* and the skin around the eyes *coral-red*. Both have the iris crimson. At Santo Domingo and San Nicolas, in Western Ecuador, we found these birds very numerous in flocks of from 15 to 20, looking remarkably pretty as they skimmed from bush to bush without any apparent movement of the wings, their long outspread tails shewing the conspicuous white tips down each side. They are not forest-frequenting birds, but prefer the open hill-sides and neglected clearings. On the eastern side of Ecuador we found them plentiful by the Rio Cosanga below Baeza, and also by the Coca River. Some of the Indians used the tails spread out to form head-dresses.

473. *PIAYA MINUTA* (Vieill.).

Two males from Santo Domingo. Much rarer than the preceding species. Eyelids red; bill yellow, slightly shaded with green.

474. *COCYZUS MELANOCORYPHUS* (Vieill.).

Two males and a female from the Coca. These birds are solitary in their habits, and frequent the Indian clearings, taking their prey on the wing.

Fam. RHAMPHASTIDÆ.

475. *RHAMPHASTOS TOCARD* Vieill.

Although this Toucan was fairly numerous at Santo Domingo, we only secured two males during our stay there. It was very shy and kept to the highest trees, generally in flocks of from eight to a dozen. Iris pale blue, bare skin round the eye yellowish green; lower mandible black, upper mandible yellow, shaded with blue and green down the centre. The Ecuadorians call these birds "Predicadores" or "Dios-te-de."

476. *RHAMPHASTOS CUVIERI* Wagl.

A series of males and females from the Rio Napo, where they were extremely numerous. This was remarkable, for

the Indians slaughtered them by the hundred, and at certain seasons organized expeditions especially for killing them. I have seen them return from these expeditions with many hundreds of smoked Toucans, which they keep to eat out of the fruit season, when game is scarce. When the fruit is ripe on certain forest trees, the Indian lads are sent to make a temporary dwelling under the branches, and they take up their abode there while the fruit lasts, each boy selecting a tree to himself. With their silent blowpipes they pick off all birds that come there to feed. Considering this wholesale slaughter, it is a wonder that this Toucan and many other birds have not long ago become extinct, in the Napo region at any rate. The Indians use the feathers for decorating their weapons and persons, while from the bills they carve quaint necklaces. The bare skin around the eyes is shaded Oxford blue. Indian name "Dumbiqui." When we were on the Napo we only met this Toucan singly or in pairs.

477. *PTEROGLOSSUS PLURICINCTUS* Gould.

One male from the Coca River. Iris cream-coloured; skin around the eyes dark red; legs and feet olive-green.

478. *PTEROGLOSSUS CASTANOTIS* (Gould).

A male and two females from Archidona and the Coca. In each case the bills vary very much in size and colour. Iris grey; skin round the eyes cream-coloured.

479. *PTEROGLOSSUS ERYTHROPYGUS* Gould.

Five males and two females from Santo Domingo appear to belong to this species, which is common in the banana-plantations around the huts, sometimes in small flocks, but more often singly. This is the only Toucan which I have observed to settle on the ground in a wild state. Pupil dark green; iris yellow; eyelids blue; bare skin round the eyes crimson; legs and feet dark green. The bill is creamy white (pale stone-colour), shading into red at its base, while the tip is red; slaty black shews along the cutting-edge, and some specimens have a dark line down the centre. Two of the birds are changing the wing- and tail-feathers from brown to dark dull green.

480. *PTEROGLOSSUS FLAVIROSTRIS* Fraser.

A male from the Coca. Skin around the eyes red ; legs and feet dark green.

481. *ANDIGENA LAMINIROSTRIS* Gould.

A male from Milligalli, Western Ecuador, 6000 feet. The only example which we saw there during our visit in September, but the bird appears to be more numerous at other seasons. It is met with singly or in pairs.

482. *ANDIGENA HYPOGLAUCUS* Gould.

Two males and a female from Papallacta, Eastern Ecuador, 11,500 feet. This Toucan is probably found at a higher elevation than any other. It seemed strange to us at first to find it where the nights were frosty and the days cold and miserable when the sun did not shine. In this genus the colours of the bills do not appear to change very much after death. Dark sealing-wax-red is the predominating colour in that of this species. The female is greenish on the flanks and is smaller than the male.

483. *ANDIGENA SPILORHYNCHUS* (Gould).

A male from the Eastern Andes between Papallacta and Baeza.

484. *AULACORHAMPHUS HÆMATOPYGIUS* (Gould).

Six males and three females from various localities in Western Ecuador at about 3000 or 4000 feet elevation. They are more often found singly than in pairs, higher or lower as the forest fruits ripen, and seem quiet and rather inactive. As they frequent the bushes and low trees of the forests, their green plumage blends with the foliage, and they are somewhat difficult to detect, especially as they sit motionless for a long time together. Bill dark dull red.

485. *AULACORHAMPHUS ALBIVITTA* (Briss.).

Two males and four females from Baeza and the neighbourhood. This Toucanet takes the place in Eastern Ecuador of *A. hæmatopygius* of the western side. They have similar habits, but perhaps the present species frequents the open hill-sides a little more. Bare skin around the eyes

and base of bill dark red. The male is decidedly more blue around the eyes than the female.

Fam. CAPITONIDÆ.

486. *CAPITO BOURCIERI* (Lafr.).

Four males and a female from Santo Domingo and Guanacillo, western forests. Local name "Ruisenñor."

487. *CAPITO RICHARDSONI* (Gray).

A male from near Archidona, Eastern Ecuador.

488. *CAPITO PUNCTATUS* (Less.).

Two males and a female from Archidona and the Rio Coca.

489. *CAPITO SQUAMATUS* Salv.

Capito squamatus Salv. Ibis, 1876, p. 494, pl. xiv.

A pair of these rare Barbets from Santo Domingo. It was quite dusk when we saw three of them on the bare branch of a tree near the edge of the forest. We killed two at one shot, but as they fell among the undergrowth, and it was too dark to see, we only recovered one, a female. The next evening at the same hour, and on the same tree, we saw another, which we shot, and it proved to be a male. It has the whole of the breast and abdomen white, with a wash of pale sulphur-colour on the fore part of the chest. The thighs are of a darker and more greenish black than in the female. The whole of the back, shoulders, and rump are glossy blue-black, with some brownish feathers on the nape. The wings are more clearly marked with white than in the female, and the undersides are entirely yellowish white. The male has also a much redder forehead. In the female the back, shoulders, and rump are narrowly edged with greyish white, and the throat and upper part of the breast are black. The stomachs contained berries, beetles, and moths. Iris yellow. The single unsexed type skin in the British Museum is a female.

490. *TETRAGONOPS RHAMPHASTINUS* Jard.

Seven males and three females from Gualea and Intag, Western Ecuador. Generally to be found singly among the lower forest trees.

Fam. PSITTACIDÆ.

491. *ARA ARARAUNA* (Linn.).

A male only of the well-known Macaw from the Napo. We often observed the birds flying overhead at night in large flocks, but never chanced upon their feeding-grounds. They are much sought after by the Indians, for the sake of their plumage. The Indian name for them on the Napo was "Guacamayo."

492. *ARA SEVERA* (Linn.).

We shot examples of this Macaw at Santo Domingo, in Western Ecuador, and also on the Napo. In both localities they were fairly numerous, and there appears to be no difference whatever between them.

493. *PYRRHURA SOUANCÆI* (Verr.).

This Conure was common on the Upper Napo, where it was nesting in April, May, and June.

494. *PACHYNUS BRACHYURUS* (Temm. & Kuhl).

A pair from the Rio Coca. We only once came upon a large flock of these Parrots, when they were congregating at sunset in the high trees along the river-banks for the night. Iris pale yellow.

495. *PIONUS MENSTRUUS* (Linn.).

Common on the Napo, but most plentiful on the lower parts.

496. *PIONUS CORALLINUS* (Bp.).

A male from Guanacillo, Western Ecuador. Beak coral-red, white at the tip.

497. *PIONUS SENILOIDES* (Mass. & Souancé).

Two males and a female from San Nicolas, Western Ecuador, and Baeza, Eastern Ecuador, 5000 feet. At the former place we found them in flocks in the early morning among the maize-fields on the hill-sides. They retire to the forests during the day. The Indians at Baeza told us that great numbers arrive there about October. They then kill them and partially smoke them, to sell to the rubber-hunters who pass through.

498. *PIONUS CHALCOPHTERUS* (Fraser).

Two males and two females from Santo Domingo. Not common there, and met with in pairs. Bill yellow horn-coloured. Bare skin round the eyes red.

499. *UROCHROMA HUETI* (Temm.).

A male from near Baeza. Found in small flocks.

500. *UROCHROMA STICTOPTERA* ScL.

Urochroma stictoptera ScL.; Salvad. Cat. B. xx. p. 357.

One male of this rare Parrot was obtained in the forests a little below Baeza. Only two examples were seen. Bill whitish horn-coloured.

501. *PSITTACULA CÆLESTIS* Lesson.

A male from Manta, on the western coast. Seen in small flocks outside the town and along the sea-shore.

502. *BROTOGERYS VIRESCENS* (Gm.).

A very common bird on the Lower Napo, but unknown on the upper parts of the river. On our canoe-journey down the stream we found it congregating along the banks by thousands in the evening. If disturbed the flocks flew around with such deafening cries that it was impossible to hear each other speak. Our Indians delighted in disturbing them. They roosted in trees growing in marshy ground and where the river-banks were less dense than elsewhere. They were nesting on the Marañon in August.

503. *BROTOGERYS JUGULARIS* (Deville).

Fairly numerous on the upper parts of the Napo, but not seen by us on the lower parts of the river. We saw young in the possession of the Indians in April.

504. *BROTOGERYS TUI* (Gm.).

First seen by us on the Lower Napo near the mouth of the Curari. Just after we entered the Marañon our Indians discovered a nest a little way off in the forest. It was about twenty feet from the ground, in the hollow of a branch. It contained five young, some almost fully fledged, while others had hardly a feather on them. I reared several of these and brought them to England with me.

Fam. STRIGIDÆ.

505. *STRIX FLAMMEA* Linn.

Two males from Quito. One is quite young. It was taken from a church tower and brought to me alive. It is fully fledged, but thickly covered with down on the head and about the tarsi. The facial frill is much darker than in the adult male, as is likewise the dark spot in front of the eye; the former extends more or less around the eye.

Fam. BUBONIDÆ.

506. *PHOLEOPTYNX CUNICULARIA* (Mol.).

A pair from a "quebrada" near Quito, where the birds live in holes in the cliffs.

507. *GLAUCIDIUM JARDINII* (Cab.).

Seven males and four females from the vicinity of Quito. Common in many of the "quebradas," where it may be seen sitting about the holes in the rocky faces of the cliffs during the day.

Fam. FALCONIDÆ.

508. *CIRCUS MACULOSUS* (Vieill.).

A male from Pedregal, 12,000 feet, and a female from Corazón, about 13,000 feet. The stomach of one individual contained the remains of a fair-sized lizard.

509. *ASTURINA MAGNIROSTRIS* (Gm.).

A male from Popayán, Colombia. Frequents the trees around the fields, and preys chiefly on Pigeons. Cere and skin around the eyes chrome-yellow.

510. *BUTEO LATISSIMUS* (Kaup).

Two males from the forests of Archidona and a female from the summit of the high forest-covered Guacamayo range, which has to be crossed in descending to the Napo forests after leaving Baeza. The female was feeding on one of the enormous earthworms common in those parts. Iris yellow.

511. *TACHYTRIORCHIS ALBICAUDATUS* (Kaup).

Two males from Pichincha and Corazón, about 12,000 feet.

512. *GERANOÆTUS MELANOLEUCUS* (Vieill.).

A male and a female from Quito. The former was shot at the Santa Carolina marshes outside the town, and the latter in the garden of the British Consulate. These birds are by no means numerous in the immediate neighbourhood of Quito, for if they put in an appearance they are at once shot, as they steal the poultry. Local name "Gabilán de pollo."

513. *ACCIPITER BICOLOR* (Vieill.).

A female from Santo Domingo. Bare skin around the eyes yellowish red; legs and feet light yellow.

514. *FALCO FUSCO-CÆRULESCENS* (Vieill.).

A male from about 12,000 feet on Antisana. Skin around the eyes red; legs and feet pale yellow.

515. *FALCO ALBIGULARIS* (Daud.).

A male, shot in the forests at Santo Domingo. Cere chrome-yellow; legs and feet a little lighter.

516. *TINNUNCULUS SPARVERIUS* (Linn.).

Two males and two females from the neighbourhood of Quito. Iris yellow; cere yellow; legs and feet dark yellow; claws black.

517. *ELANOIDES FURCATUS* (Linn.).

A male from Santo Domingo. Not rare there, but difficult to shoot, as it either settles out of range on the tops of the highest trees or circles about over the forests.

518. *MILVAGO CARUNCULATUS* (Des Murs).

Four males and a female from Pichincha and the Valle de Viciosa. Common at the latter locality on wet grassy ground. We often observed seven or eight feeding together. Worms constitute the greater portion of their diet. They are comparatively numerous on the Eastern Andes, where there are more stretches of flat land, than on the Western Andes. At some places they frequent the vicinity of human dwellings, even roosting on the roofs. They were nesting in the Valle de Viciosa in December. The colour of the bare skin on the face varies much in the males. In some birds it is dark angry-looking red and light red, and in others light reddish

yellow. Iris blackish grey; legs and feet chrome-yellow. Local name "Curiquingui."

519. *POLYBORUS CHERIWAY* (Jacq.).

A male from Corazón, at about 12,000 feet. Scarce. The bare skin on the face is dark red.

Fam. CATHARTIDÆ.

520. *SARCORHAMPHUS GRYPHUS* (Linn.).

Condors were first seen by us at the village of Puracé, in the Central Cordillera of Colombia, above Popayán. They were looked upon by the natives there as rare birds, and to shoot one was considered a grand triumph. We saw the same pair in the neighbourhood for more than a week, but we could not get the chance of a shot at them. These were all that we saw until we reached Pasto, but from thence southwards we met with them in increasing numbers at high elevations. When staying at Quito in November, we arranged for a visit to Pichincha, on purpose to shoot some of these Vultures. We went provided with a tent and all necessities for a stay of four days. We also bought an old mare to kill, as we had been told that the Condors had a partiality for such food. At that time, not knowing the country nor the habits of the birds, we did not choose so advantageous a spot as we might have done, for the Indians led us to an open, and what afterwards proved to be a very exposed, sloping valley, between the old and the present crater, at an altitude of about 15,000 feet. We put up our tent in a heavy snowstorm, and then the Indians left us, with the exception of one, promising to come back for us in four days. We shot the old mare on the brink of a "quebrada" about 300 yards from the tent, and then awaited results. Our first night proved how badly we were located. Apart from the cold, which was intense, the wind blew almost a hurricane, and it seemed as if our tent would be carried completely away. We were relieved when daylight dawned and we were able to strengthen it. The uncanny feeling produced by the tremblings and subterranean noises vanished as the sun rose behind the Eastern Andes, lighting up in succession the snowy heads of the

monarchs of the Equator—Cayambe, Antisana, Cotopaxi, Cotacachi, Sincholagua, and others.

We found that during the night foxes had been eating the carcase, and many were still around it. We shot several, but they were so bold and venturesome that we had some difficulty in keeping them off. As the day wore on a few Condors began to arrive. It was a grand sight to see such great birds directly overhead in the cloudless sky. The wind rushing through their wings made such a loud noise when we first heard it in the tent, that we thought they were soaring around us. Not one of them settled near the carcase during our stay up there, but they watched it from inaccessible heights around. We tried to shoot them when flying overhead, but they kept out of range, and although we sometimes heard the bullets strike them, they seemed to have no effect. We were unfortunate in having no rifles with us. They had been detained at the Customs and had not then arrived in Quito. When the Indians returned to fetch our baggage, we went back to Quito for a week, and then made a second visit to Pichincha. This time we chose a better camping-ground about a thousand feet lower down, on a spot overshadowed by high cliffs. A steep incline led to the top of them, and here we killed another mare. At this place we camped for a week, and although great numbers of Condors continuously circled overhead, not one settled. However, we shot a male and two females that came down lower than the rest. The male measured 10 feet 6 inches across the wings. Both the females were smaller. It is most unpleasant work skinning a Condor, for they are covered with lice; on no other bird have I seen them anything like so abundant.

In Ecuador Condors are much more numerous on the Eastern Andes, owing to the vaster solitudes there and the thousands of cattle that wander over the mountains in a half-wild condition. Numbers of the latter perish from cold and other causes, so there is a continual feast for the Condors. We once came upon four dead oxen near Cotopaxi, and there must have been at least eighty Condors around them, but they all took to flight as soon as they saw us appear on a ridge

above. The animals had apparently been dead for some days, but, with the exception of the eyes, no part of them had been eaten. The grass around was completely worn away by the feet of so many great birds. The shepherds told us that the Condors sometimes sit round the bodies for several days before they begin the feast. They commence to eat them under the tail, and thence pull all the entrails out.

I think that Dr. Sharpe (Cat. B. i. p. 21) is right in naming a second species of Condor from Ecuador *S. æquatorialis*; but the brown variety is *larger* than the white-winged kind, and not *smaller*, as Orton supposed. The smaller brown individuals would be the young of both kinds. The first brown examples that we saw were on the "páramo" of San Gabriel, near the Colombian frontier, and were of ordinary size; I took them to be the young of the ordinary Condor. But on Pichincha, and at other places south of Quito, we occasionally saw other brown specimens, which at *once* struck us by their extraordinary size. I mentioned this to Mr. Söderström, and he said that he always took the brown bird to be the larger. He said that they chiefly inhabited the region around Chimborazo. I found that the natives distinguished them by the name of "Buitre Cafe," and shepherds at different places on the Eastern Andes all agreed that when adult they were larger than and not so common as the others.

Whymper, in his splendid work on the Great Andes of the Equator, states that he never saw Condors flying higher than an altitude of 18,000 feet. He certainly had more opportunities of forming a correct opinion than anyone else I know of, and, so far as my experience went, I quite agree with him.

The Indians who live in the high mountains often catch Condors by digging a hole in the ground sufficiently large for a man to hide in, over which they place a cow's hide, leaving only a small part uncovered down one side. Near this they place the carcass or part of an animal, and the man in hiding secures the Condors by the legs as they settle. Still another way is to place a carcass in a fairly deep trench, from which the Condors are unable to take wing again.

Fam. PHALACROCORACIDÆ.

521. PHALACROCORAX BRASILIANUS (Gm.).

This Cormorant was common on the Upper Napo, but we did not see it after we passed the Coca. Iris bright emerald-green; bare skin about the gape red; bill yellowish green, black down the centre and yellow at the tip. One skin, that of a young male, has the throat, neck, and breast fawn-coloured mixed with brown and black. Wings and back dark slaty grey, each feather margined with black; tail slightly tipped with white.

Fam. ARDEIDÆ.

522. BUTORIDES CYANURUS (Vieill.).

A male from the stream running through the clearing at Santo Domingo. Bill shaded yellow and green; iris yellow.

Fam. PLATALEIDÆ.

523. THERISTICUS BRANICKII (Berl. & Stolz.).

Theristicus branickii Salvad. Ibis, 1900, p. 515, pl. ix.

A flat plain in the elevated Valle de Viciosa, between Antisana and Kilendaña, was the only locality where we met with these rare Ibises. They were generally in pairs, or at most three or four together, and were exceedingly shy, while, on account of the open nature of the ground they frequented, they were difficult to shoot. When we were fortunate enough to kill one, we could generally get another, as the birds flew screaming around their fallen companion. They were more easily approached in the early morning, after snow had fallen during the night, as they then sat shivering about until the sun had melted the snow, and were not in such a hurry to take flight. A shepherd, who was the only inhabitant of this region, told us that they were not resident there all the year. He said that sometimes for two or three months at a time there were none of them in the valley; but whether this was at irregular or fixed periods he was unable to say. During the week that we stayed there in December we saw some of these birds every day, and often heard their cry during the moonlight nights. It sounded as if they were flying over the

hut. Scarcely anyone seemed to know these birds, which was probably owing to the fact of the region that they inhabit being so isolated; but the natives who had seen them before spoke of them as "Bandurias." Iris blood-red.

Fam. ANATIDÆ.

524. QUERQUEDULA CYANOPTERA (Vieill.).

A male from the Santo Carolina marshes, outside the north of Quito. An occasional visitor only to them.

525. MERGANETTA COLUMBIANA (Des Murs).

A young male from the lake above Papallacta, about 12,000 feet. Legs and feet yellow; upper mandible dark olive-green, under mandible yellow.

Fam. COLUMBIDÆ.

526. COLUMBA RUFINA (Temm.).

Two males, one from Popayán, Colombia, and the other from the Chillo Valley near Quito.

527. COLUMBA SUBVINACEA (Lawr.).

Two males from Baeza, Eastern Ecuador, and another male from Santo Domingo, on the Pacific side. The last is much smaller than the other two, and agrees in measurements with specimens described by Mr. Hartert from Paramba as *C. subvinacea berlepschi*. The iris in both cases is crimson. The birds seemed tame in their habits, and those from Baeza were shot close to the hut door.

528. METRIOPELIA MELANOPTERA (Mol.).

Numerous near Cotopaxi, at about 13,500 feet, among the rocks and lava. As nothing but a few tufts of coarse grass grew there, it was difficult to imagine what they could find to eat. The stomachs of two that we shot were quite empty. In life they have a primrose spot in front of the eye.

529. CHAMÆPELIA PASSERINA (Linn.).

Four males and two females from the Chillo Valley, where we found them numerous along the dusty roads. Their flight is short and swift, and when disturbed they settle again a short distance ahead. In this way they will keep in front

of the traveller for a mile or more. They build their nests on the lower branches of acacia-trees, but I saw one in an exposed situation on the spreading top of the giant flower-stalk of an aloe. The base of the bill is cream-coloured, but two males shot in the nesting-season had it dull red. Feet flesh-coloured.

530. *PERISTERA CINEREA* (Temm.).

Two males and a female from Santo Domingo. Not common there, and met with in pairs running about the footpaths in the clearing. When disturbed they skulk in the grass until a person is close to them, then rise suddenly with a swift zigzag flight. Beak greyish green, with yellowish tip; iris red; feet flesh-coloured.

531. *OSCULATIA SAPPHIRINA* (Bp.).

A male from the Rio Suno, Upper Napo, and another in nestling-feathers, not sexed, from the Coca in June. Shot in the forests.

532. *OSCULATIA PURPUREA* (Salvin).

Near Santo Domingo we shot one of these beautiful and rare Pigeons, and a negro brought me a much-damaged female, with an egg inside ready to be laid, but broken. We often heard the curious loud note, but seldom saw the birds, for they were always in the tops of the highest trees in the dense parts of the forest. I think that this is the most difficult bird to skin which I have ever come across; its skin is quite as tender as the worst of the Trogons.

533. *GEOTRYGON BOURCIERI* (Bp.).

A male shot in the forests below Baeza near the Rio Cosanga. It was the only one we actually saw, but several times the Indians drew our attention to the loud mournful note on our way down through the forests. "Chiniplaya," the Indians called the birds in the Quichua tongue.

Fam. *CRACIDÆ*.

534. *PENELOPE ORTONI* (Salv.).

A male and female from Santo Domingo, where they were

fairly numerous in the forests. On two occasions I saw a pair of them in the tallest trees on the edge of the forest in the evening. I did not recognise our birds as being the rare *P. ortonii* while we were down in the forests, or I could have skinned more of them, for the Indians often brought them to us for food. Iris brown; bare skin on the throat yellowish red; legs and feet bluish red. Local name "Pukapava."

535. *PENELOPE MONTAGNII* (Bp.).

A male from the western side of Pichincha, at about 7000 feet. Bare skin on the throat red.

536. *PIPILE CUMANENSIS* (Jacq.).

Common on the middle region of the Napo during our stay there, and when the fruits are ripe on the upper river in September they are particularly plentiful. They are then very fat, and the Indians kill them in great numbers and smoke them. Pupil black; iris dark reddish brown; skin on the face white, cobalt-blue about the base of the bill, with a kid-like surface; bare skin on the throat dull indigo-coloured; legs and feet coral-red. The young resemble their parents, except that they lack the metallic lustre on the feathers and the crest is more stone-coloured. The flesh is very rich, with a strong game-like flavour. These birds are often tamed by the Indians, and possess great homing instincts.

537. *ORTALIS GUTTATA* (Spix).

These birds were common on the Upper Napo and its tributaries, where we always found them among the thick bushes on the low river-banks, and seldom far into the forests. They appear to only resort to the trees at night, when they keep as near to the ends of the low branches as they can, about 15 to 18 feet from the ground. In their flight, and the flavour of their flesh, they much resemble Partridges. They are great favourites as pets with the Indians, and even the adults when caught quickly become tame and can be given their liberty about the huts. They cross readily with fowls, and for this reason the whites keep them on the Marañon. In the early morning they answer the cocks, when

they crow, with a loud and curious kind of crow of their own, repeated three times in succession. Iris brown ; bare skin on the face brownish grey ; throat red ; legs and feet red. They feed largely on the young shoots of bushes, and are especially fond of yuca-shoots. Indian name "Guataracu."

Fam. RALLIDÆ.

538. RALLUS MACULATUS (Bodd.).

A male caught by a dog near the Cauca River, Popayán. We saw one or two in captivity there, running about the houses. Iris dark red ; bill yellowish olive, orange near the base ; legs light greenish yellow.

539. RALLUS ÆQUATORIALIS.

A pair from the Santa Carolina marshes near Quito. The female has only a slight touch of white on the shoulders, and has a white underside to the tail.

540. PORZANA CASTANEICEPS Scl. & Salv.

A male from Archidona, Eastern Ecuador. Shot among the thick undergrowth of the forest. Bill greenish yellow ; legs olive-green ; iris dark brown.

541. FULICA ARDESIACA Tsch.

We shot a pair of Coots on the marshes near Quito, which appear to be typical *Fulica ardesiaca*. Iris red ; bill and forehead pink ; legs and feet light green, bluish in parts.

542. FULICA sp. inc.

On the small lakes near Cotopaxi, on the way to the Valle de Viciosa, we shot another pair of Coots, which differ from *P. ardesiaca* and may belong to an undescribed form. In this case the bill and forehead in both sexes were pale yellow, with a green tip and reddish sides. Legs and feet bluish grey in the female and of a darker slate-colour in the male.

Fam. EURYPYGIDÆ.

543. EURYPYGA MAJOR (Hartl.).

A male from Santo Domingo.

Fam. PSOPHIIDÆ.

544. *PSOPHIA NAPENSIS* Scl. & Salv.

A pair from the Napo, where they are numerous and great favourites with the Indians, as they become remarkably tame and affectionate, and often accompany them in their hunting expeditions, when they follow quite as well as a dog. I reared a pair of small chicks, and they reached England in safety. Only those who have kept these birds in captivity, and had them always with them, as I had in South America, can believe how interesting they are. The young have grey legs, and it is only after they are about nine months old that these become green. The flesh is hard and tasteless. Three Indian tribes, otherwise speaking different languages, called these Trumpeters "Yacami." At night they resort to trees to sleep, roosting as high up as possible.

Fam. PARRIDÆ.

545. *PARRA JACANA* (Linn.).

A male from the Napo.

Fam. THINOCORIDÆ.

546. *ATTAGIS CHIMBORAZENSIS* Scl.

Met with on Pichincha, at altitudes between 13,000 and 15,000 feet right up to the snow. They are now scarce on this mountain, but we found them rather plentiful at certain places on the Eastern Andes. They do not afford much sport in shooting. The legs and feet are almost of an olive-green shade. Local name "Cordoniz."

Fam. SCOLOPACIDÆ.

547. *GALLINAGO JAMESONI* (Bp.).

Two males and a female from Pichincha. This fine Snipe used at one time to be common on the eastern side of the volcano. They are not always found there now, owing to the manner in which they are persecuted all the year round. Our specimens were shot on the swampy grass-land around the little village of Lloa, 11,500 feet altitude. In November we came across a nest containing two eggs.

548. *TRINGA MACULATA* (Vieill.).

A male and female from the marshes near Quito.

549. *GAMBETTA MELANOLEUCA* (Gm.).

A male from the Santa Carolina marshes, Quito.

550. *GAMBETTA FLAVIPES* (Gm.).

A female from the same locality.

551. *HELODROMAS SOLITARIUS* (Wilson).

A female from the marshes, Quito.

552. *TRINGOIDES MACULARIUS* (Linn.).

Four males and two females, from Santo Domingo and San Nicolas. Common at both localities in October, as well as on the banks of all the rivers and streams flowing down to the Pacific. We also saw them running along the paths of the small forest-clearings far from the vicinity of rivers.

Fam. *LARIDÆ*.

553. *LARUS SERRANUS* (Tsch.).

Two males from the small lakes near Cotopaxi, altitude 13,700 feet. Very numerous there, I believe, all the year round. In December we saw as many as seventy or eighty on a small pond in company with *Querquedula cyanoptera* and Coots. One Gull was always circling in the air to keep watch, and, when anyone approached, it gave the alarm to the others, which rose with loud screamings. Sometimes, when the weather is severe on the heights, they descend into the Chillo Valley in large numbers. Local name "Palomitas."

Fam. *TINAMIDÆ*.

554. *NOTHOPROCTA CURVIROSTRIS*.

A male and two young from among the páramo grass on Pichincha, at altitudes between 11,000 and 13,000 feet. They are much scattered on this mountain, and we only came across them singly or in pairs, for they are persecuted all the year round by sportsmen and Indians from Quito. Some of the latter get their living by supplying them to the restaurants in the town. They are still fairly plentiful on

Corazón, but that mountain is also getting largely exploited for them. In places at present unexplored by the Quitenos we found them abundant. They afford good sport, and their flesh is as fine as any that I have eaten. Local name "Perdriz."

XV.—*Remarks on the Species of American Gallinæ recently described, and Notes on their Nomenclature.* By W. R. OGILVIE-GRANT.

SINCE the publication of the twenty-second volume of the 'Catalogue of Birds in the British Museum' in 1893 a number of new species and subspecies of American Game-birds have been described. Below will be found a list of them, with remarks on and identifications of those which are not considered valid by the writer, and with his reasons for proposing to suppress them.

The numbers preceding the specific names are those used in the 'Catalogue of Birds': the position of the new species admitted as valid is indicated by such symbols as "1 A."

6. *LAGOPUS LEUCURUS* (Cat. B. xxii. p. 52).

Lagopus leucurus altipetens Osgood, Auk, xviii. p. 180 (1901) [Colorado].

I have compared three *adult males in autumn plumage* from Colorado (one being from Blaine's Peak, the typical locality of *L. l. altipetens*) with two males and a female in autumn plumage from the Cascade Mountains, and find them absolutely identical.

1. *CANACHITES CANADENSIS* (op. cit. p. 69).

Canachites canadensis labradorius Bangs, P. N. Eng. Zoöl. Club, i. p. 47 (1899) [Labrador].

Canachites canadensis osgoodi Bishop, Auk, xvii. p. 114 (1900) [North-west Territory, Northern British Columbia, and Alaska north to the coast mountains].

Canachites canadensis (Linn.) Norton, Pr. Portland Soc. N. H. ii. p. 151 (1901) [Labrador and Hudson Bay].

Canachites canadensis canace (Norton) op. cit. p. 152 [Canada, Northern United States, and New Brunswick].

I. Mr. Bangs attempts to shew that the Canadian Grouse from Labrador differ constantly from birds obtained in Maine, and names the former *C. c. labradorius*. He states that the upper parts in the *females* of the former are much less suffused with buff or ochraceous throughout the plumage, and are more nearly grey and black.

He compares females killed between the 12th of July and the 9th of August, *i. e.* still in entire or partial worn breeding-plumage, with nearly freshly-moulted females from Maine shot between the 16th and 27th of August.

Our specimens shew that there is no difference in plumage which is not due to season or age. A female from Nipissing Dist., Ontario (September), and a female from Quebec (October), agree exactly with a female from Ungava (December); all three have the upper parts mostly black and grey, which was supposed to be characteristic of Labrador birds.

II. Mr. Bishop follows by separating the Canadian Grouse inhabiting N. British Columbia and Alaska from those met with in Maine.

He says the *female* of *C. c. osgoodi* in breeding-plumage differs from the females found in Maine in having all the bars on the plumage cream-buff and greyish white instead of ochraceous white.

Specimens in the British Museum Collection disprove this statement; for females from Nulato, Fort Simpson, and Jasper's House are indistinguishable from females from Maine and New Brunswick.

III. Lastly, Mr. Norton correctly points out that *C. c. labradorius* is a mere synonym of typical *C. canadensis* (Linn.), which was founded on birds from Hudson Bay; but he is of opinion that birds from New England and parts of Canada are distinct and should bear the name of *C. c. canace* (Linn.). As already stated, I cannot admit this distinction, all the alleged differences in plumage being fully accounted for by season or age, and being in no way dependent on locality.

The fine series of this Grouse in the British Museum appears to be much more complete than that at the disposal of the writers quoted above. I have also examined a number of specimens from the Tring Museum, which have been kindly lent me by Mr. Rothschild, and they tend to confirm my opinion.

1. MELEAGRIS GALLOPAVO (op. cit. p. 387).

Dr. Coues [*cf.* Auk, xiv. pp. 272-274 (1897)] agrees with the writer that the name "*Meleagris gallopavo* Linn." can only be used for the Mexican bird, and that *M. mexicana* Gould is merely a synonym. The Linnean name is founded chiefly on the figure in Albin's Nat. Hist. B. iii. p. 33, pl. 35 (1740), and "the Turkey Cock" there depicted agrees perfectly with Gould's type.

Mr. Nelson [Auk, xvii. p. 122 (1900)] says that "there is every reason to suppose" that "*M. gallopavo* Linn." should be referred to the birds from Vera Cruz, the only part of Mexico occupied by the Spaniards during the first few years of the conquest. I cannot see any possible ground for such a supposition; for, though Mexico was discovered in 1517, the City of Mexico captured in 1521, and the Turkey established in Europe by 1530, the fact remains that the "Turkey-Cock" figured by Albin in 1740, on which the Linnean name was founded, can only have been of West or North Mexican origin.

1 A. MELEAGRIS GALLOPAVO INTERMEDIA.

Meleagris gallopavo var. *intermedia* Sennett, Bull. U.S. Geol. Surv. v. p. 428 (1879) [Rio Grande].

Meleagris gallopavo ellioti Sennett, Auk, ix. p. 167, pl. iii. (1892) [Rio Grande].

Meleagris ellioti Grant, Cat. B. Brit. Mus. xxii. p. 388 (1893) [Tamaulipas, E. Mexico, and Hidalgo, S.W. Texas].

Meleagris gallopavo merriami Nelson, Auk, xvii. p. 120 (1900) [Mountains of Arizona and Western New Mexico and south to the Mexican border].

In the 'Catalogue of Birds' I accidentally used the name *M. ellioti* for this form. Sennett, having given the Rio Grande

bird the name *intermedia*, had no right to withdraw this name in favour of *elliotti*.

Coues (Auk, xiv. p. 275) says :—" There is probably another change required in our nomenclature of this genus; certainly so, if, as some think, *M. g. elliotti* of Sennett, 1892, is synonymous with his *M. g. intermedia* of 1879."

There can be no question about these names being synonymous; Sennett clearly states that they are so, and both were founded on Rio Grande birds.

Mr. Nelson's *M. g. merriami* is also merely a synonym; but by contrasting his birds with examples of *M. gallopavo* (= *mexicana* Nelson) and *M. americana* (= *fera* Nelson) he would have us suppose that his "new subspecies" is very distinct. A comparison with *M. intermedia* (= *gallopavo* Nelson), with which his birds are obviously synonymous, is avoided [*cf.* Auk, xviii. p. 310 (1901)].

2. MELEAGRIS AMERICANA (Cat. B. xxii. p. 389).

The Turkey question was discussed at some length by Dr. Coues in 1897 [Auk, xiv. pp. 272-275 (1897)].

Taking the 'Catalogue of Birds' he goes through all the older synonyms given there under the heading *Meleagris americana*. These names are as follows :—

Gallopavo sylvestris Catesby, Carol. i., App. p. xlv (1730);
Brisson, Orn. v. p. 162 (1760).

Meleagris americana Bartram, Trav. p. 290 (1791) [Pennsylvania].

Meleagris palawa Barton, Med. & Phys. J. ii. pt. i. pp. 163-164 (1805) [United States].

Meleagris silvestris Vieill. N. Diet. d'Hist. Nat. ix. p. 447 (1817).

Meleagris fera Vieill. Gal. Ois. ii. p. 10, pl. 201 (1825).

Coues states his reasons for rejecting the older names, but does not suggest which name, if any, should be substituted for *M. americana*. In 1899 (Auk, xvi. p. 77) he rectifies his previous omission and proposes the name *Meleagris gallopavo fera*. He also remarks "there occurs on p. 274 the typographical error of *pera* for *fera* in citing the Gal. Ois. ii.

1825, p. 10, pl. 201, and I inadvertently used the term *sylvestris* instead of *fera* in citing the *Nouv. Dict. d'Hist. Nat.* ix. 1817, p. 447."

It is a self-evident fact that Coues never looked up Vieillot's original reference, as, had he done so, he would have found "*silvestris*," as cited above.

Finally, Mr. Elliot puts the finishing touch to this statement (*cf.* Auk, xvi. p. 231). He writes:—"In the same number of 'The Auk' the name for our northern Turkey has been correctly given as *M. fera* Vieill., *Nouv. Dict.* 1817, p. 447, and not *M. silvestris* Vieill. as given by me in 'Game-Birds.' It may be interesting to state how I came to adopt that name, as Vieillot never described any Turkey as *sylvestris* There was no copy of the 'Nouv. Dict.' available, and I could not delay the printer until I should be able to consult it, so, perforce, contrary to my established custom in such cases, I accepted the citation given in the *B. M. Cat. Birds*, xxii. p. 389, as correct, and was thus led astray." !!

This inaccurate statement needs no further comment.

I cannot see any objection to the employment of Bartram's name *M. americana*, for, though he gives no description, the name has been much used and can only refer to the Pennsylvanian bird. The only alternative is to use *Meleagris silvestris* Vieill.

1. *DENDRORTYX MACROURUS* (op. cit. p. 392).

Dendrortyx oaxucæ Nelson, Auk, xiv. p. 43 (1897) [♂, Totontepec, Oaxaca, Mexico].

Dendrortyx macrourus griseipectus Nelson, t. c. p. 44 [♂, Huitzilac, Morelos, Mexico].

Dendrortyx macrourus striatus Nelson, t. c. p. 44 [♀, Chilpancingo, Guerrero, Mexico].

Dendrortyx macrourus dilutus Nelson, l. c. xvii. p. 254 (1900) [Patzcuaro, Michoacan, Mexico].

On apparently only four specimens of *Dendrortyx*—three males and a female from Oaxaca, Morelos, Michoacan, and Guerrero respectively—Mr. Nelson has founded as many new species and subspecies.

In company with Mr. F. D. Godman, I have very carefully read Mr. Nelson's descriptions and remarks, and have re-examined the specimens in the British Museum. Our series of *D. macrurus*, though small, is apparently more than twice as large as that at Mr. Nelson's disposal, and seems to shew beyond doubt that his supposed species and subspecies are untenable, and that the differences pointed out between the individuals have no geographical significance.

2. *LOPHORTYX GAMBELI* (Cat. B. xxii. p. 403).

Callipepla gambeli deserticola Stephens, Auk, xii. p. 371 (1895) [Colorado Desert, California].

Callipepla gambeli fulvipectus Nelson, Auk, xvi. p. 26 (1899) [Rio Mayo, Sonora, Mexico].

Of the first of these subspecies the Museum possesses typical male examples collected by Mr. Stephens himself in the Colorado Desert; of the second we have a female example from Hermosillo, Sonora. I am unable to see any reason whatever for separating these birds from typical *L. gambeli*.

LOPHORTYX LEUCOPROSOPON Reichenow, Orn. Monatsb. iii. pp. 10 and 97, woodcut, ♂ ♀ (1895); Grant, Handb. Game-Birds, ii. p. 295 (1897).

This name was given by Dr. Reichenow to birds bred in captivity from parents of unknown origin. As suggested by him, the parents were probably hybrids, possibly between *Lophortyx californicus* and *Eupsychortyx cristatus*.

LOPHORTYX BENSONI Ridgw.; fide Sharpe, Hand-list Birds, i. p. 44 (1899) [Sonora].

I can find no published description of this species.

1. *OREORTYX PICTUS* (op. cit. p. 397).

Oreortyx pictus Ridgway, Auk, xi. pp. 193–196, pl. vi. (1894); Grant, Ibis, 1894, p. 570.

After the remarks on the sexual and geographical variations of this species that have already appeared in the 'Auk' and 'Ibis' (*vide supra*), I am surprised to see that in the 'Hand-list of Birds' [i. p. 44 (1899)] no less than three species of

Mountain Partridge are admitted:—1. *Oreortyx pictus* (Dougl.); 2. *O. plumiferus* (Gould); and 3. *O. confinis* Anthony.

3. *EUPSYCHORTYX SONNINI* (op. cit. p. 409).

Eupsychortyx pallidus Richmond, P. U. S. Nat. Mus. xviii. p. 657 (1896) [Margarita I., Venezuela].

This species is said to be “considerably paler” than *E. sonnini*.

Mr. Richmond admits having very scanty material for comparison (one male and one female). In a series of typical birds from Quonga, British Guiana, collected by H. Whitely, considerable variation is found in the plumage, some being much paler on the breast and some darker. This species was introduced into Mustique Island, Grenadines, W.I., about 1885, and there is a male in the British Museum collection procured on that island by D. W. Smith. It is very likely to have been introduced into Margarita Island. In any case the description does not lead one to believe that Mr. Richmond has much faith in the validity of the species; and, after re-examining our specimens from British Guiana, I have no hesitation in regarding *E. pallidus* as a synonym of *E. sonnini*.

COLINUS Less. Man. d’Orn. ii. p. 190 (1828) must stand in place of *Ortyx* Steph. in Shaw’s Gen. Zool. xi. p. 376 (1819) [nec Oken, Lehrb. Nat. iii., Zool. pt. ii. p. 611 (1816) : type, *Turnix sylvaticus* (Desf.)]*.

1 B. *ORTYX VIRGINIANUS* subsp. *b. TEXANUS* (op. cit. p. 419).

Colinus virginianus maculatus Nelson, Auk, xvi. p. 26 (1899) [from Tancanhuitz, San Luis Potosi, north to Victoria, and Jaumave Valley, Tamaulipas, Mexico].

* [We fail to see why “*Ortyx*,” which has, until recently, been the title of this well-known group, should be superseded by *Colinus*. It is the fact that “*Ortyx*” was casually mentioned by Oken in his ‘*Lehrbuch*’ as a synonym of *Turnix*, but it does not seem at all certain that Oken meant to propose “*Ortyx*” as a new generic term. At any rate it has never been used in place of *Turnix*. Let us give “*Ortyx*” the benefit of the doubt.—EDD.]

We have a series of birds from the area indicated, and Mr. Godman and I are both satisfied that Mr. Nelson's name is a mere synonym of the subspecies *C. texanus*.

2 A. *COLINUS GODMANI* Nelson, Auk, xiv. p. 45 (1897) [Jaltipan, Minatitlan, Coatzacoalcas, and shores of Lake Catemaco, Vera Cruz, Mexico]; xv. p. 120, pl. ii. (1898).

This species has nothing to do with *C. graysoni* Lawr., with which Mr. Nelson compares it; but is evidently nearly allied to *C. cubanensis*. The male appears to differ from that species chiefly in having the crown blackish, with brown and greyish edgings to the feathers; the sides, flanks, and belly chestnut, heavily margined with black *and devoid of white spots*; and the tertials spotted with white instead of buff.

The figure is somewhat misleading, as it conveys the impression that the entire belly is black; but we find from the description that this is not the case.

3. *ORTYX PECTORALIS* (Cat. B. xxii. p. 421).

Colinus graysoni nigripectus Nelson, Auk, xiv. p. 47 (1897) [Plains of Puebla, Mexico].

Colinus minor Nelson, Auk, xviii. p. 47 (1901) [Plains of Chiapas, near Palenque, and adjacent parts of Tabasco].

In the British Museum collection there are male examples of this species with the feathers of the under parts either uniform chestnut or narrowly fringed with black. The latter plumage apparently denotes the fully adult bird [*cf.* remarks on *C. salvini*, *infra*].

In my opinion there can be no doubt that both these names of Mr. Nelson's are synonyms of *C. pectoralis*. By almost invariably contrasting his supposed new birds with the species to which they are least nearly allied, "old friends" are made to appear in the guise of very distinct species. We cannot imagine that so excellent a field-naturalist as Mr. Nelson does this wilfully, and must therefore infer that such errors are due to insufficient knowledge of the subject and want of material. By referring to the various "Keys to the Species" given in the 'Catalogue of Birds,' xxii., Mr. Nelson would have escaped such absurdities as redescribing *Cyrtonyx sallæi*

under the name of *C. merriami*, and comparing it with *C. montezumæ* !! [vide *infra*].

5 A. *COLINUS INSIGNIS* Nelson, Auk, xiv. p. 46 (1897) [Valley of Comitán, Chiapas, and Nentón, Guatemala].

The British Museum possesses a series of this species collected by W. B. Richardson at Comitán and in the Chiapas Plains in May 1897. The females agree perfectly with the description of the type female given by Mr. Nelson: the *males*, which have never been described, very closely resemble the males of *C. ridgwayi* Brewst.; but the plumage is throughout darker, the mantle and under parts are dark chestnut instead of pale chestnut, and the black on the chin and throat extends somewhat further down the fore-neck.

7 A. *COLINUS SALVINI* Nelson, Auk, xiv. p. 45 (1897) [Tapachula and San Benito, Chiapas, Mexico].

We have a series of this species from San Benito. It is most nearly allied to *O. atriceps* Grant, from W. Mexico, but the male has the upper parts much darker and almost devoid of rufous markings, the chestnut which forms an ill-defined collar in *O. atriceps* on the nape and upper mantle being replaced by black, while in *most specimens* the dull chestnut feathers of the breast and belly are margined with black; *it should be noted, however, that in some males the black margins are indistinct or even absent*. These are perhaps immature birds. The female is much darker than the female of *O. atriceps*, and has the ground-colour of the under parts white instead of buff.

1. *CYRTONYX MONTEZUMÆ* (op. cit. p. 425).

Cyrtonyx montezumæ mearnsi Nelson, Auk, xvii. p. 255 (1900) [South-western Texas and the southern half of New Mexico and Arizona, ranging into N. Mexico].

We have examined a number of examples of this supposed subspecies, but neither Mr. Godman nor I have been able to see the slightest ground for separating it; the differences mentioned in the description, so far as we can see, have no real existence.

Mr. Nelson thinks that he has discovered that the *Odontophorus meleagris* Wagl. [*cf.* Isis, 1832, p. 278 (not p. 277 as stated in the Cat. Birds and copied by Nelson) is a species distinct from *C. montezumæ*.

He says :—"This Partridge (*C. merriami*) appears to be closely related to *Odontophorus meleagris* Wagler (Isis, 1832, p. 277), but differs in having the white spots of the flanks on a background of ashy gray instead of black. Like that species it lacks the white collar on the neck, which in *O. montezumæ* separates the black of the throat from the chestnut of the breast. Heretofore *O. meleagris* has been placed as a synonym of *O. montezumæ*, but the discovery of *C. merriami* with the same general style of markings given for *O. meleagris* indicates that the latter is probably a well-marked species which has failed of recognition through lack of material. It was described from Mexico and should take its proper place in ornithological literature." Now there cannot be the slightest doubt that *O. meleagris* Wagl. is a mere synonym of *C. montezumæ*. Either Mr. Nelson has not read Wagler's description or has failed to understand it. Wagler very clearly states that his bird has a white collar, for he writes : "fascia colli inferioris sericeo-alba." One can easily understand his describing the ground-colour of the flanks as black, for in some specimens they are dark greyish black.

2. *CYRTONYX SALLÆI* (Cat. B. xxii. p. 427).

Cyrtonyx merriami Nelson, Auk, xiv. p. 48 (1897) [East slope of Mt. Orizaba, Vera Cruz].

There can be no doubt that *C. merriami* is a synonym of the beautiful species described in 1859 as *C. sallæi*. The apparent absence of the white collar on the fore-neck dividing the black throat from the chestnut is probably partly due to the make of the skin, but in this species the white collar is always narrow and in one specimen before us is nearly wanting.

1. *DACTYLORTYX THORACICUS* (op. cit. p. 429).

Dactylortyx thoracicus lineolatus (Gould) Nelson, Pr. Biol. Soc. Washington, xii. p. 66 (1898).

Dactylortyx chiapensis Nelson, *ibid.* [San Cristobal, Chiapas, and Santa Maria, Guatemala].

Dactylortyx devius Nelson, *t. c.* p. 68 [Forests of Western Jalisco].

With apparently only eight specimens of *Dactylortyx* available for comparison Mr. Nelson gives us a revision of this genus. He distinguishes three species and one subspecies, as follows :—

Dactylortyx thoracicus (Gambel). Two females examined, one being Gambel's type.

Dactylortyx thoracicus lineolatus (Gould). One male examined.

Dactylortyx chiapensis, *sp. n.* Four specimens, males and females, examined.

Dactylortyx devius, *sp. n.* One male examined.

Along with Mr. Godman, I have again examined the series of 23 specimens in the British Museum, and, after carefully going over Mr. Nelson's work, we can see no reason for recognising more than one species. All Mr. Nelson's "species" are to be found in the series from Guatemala alone. Specimens from Northern Yucatan are somewhat smaller and lighter in colour than those from other parts of Central America, but they do not appear sufficiently different to merit a distinct name, and in any case our series, a male and two females, is insufficient to decide the question.

1. *ODONTOPHORUS GUIANENSIS* subsp. *a.* *MARMORATUS* (Cat. B. xxii. p. 433).

Odontophorus castigatus Bangs, *Auk*, xviii. p. 356 (1901) [Chiriqui].

Mr. Bangs, in pointing out the distinctive characters between his *O. castigatus* and *O. marmoratus* (Gould), says that in the latter the top of the head is *light chestnut*; but I have again examined Gould's type from Bogota and can assure him that this is not the case. The top of the head is dark brown; and our specimens from Chiriqui, though not perfectly adult, are undoubtedly of the same species as the birds from the United States of Colombia.

4 A. ODONTOPHORUS ATRIFRONS.

Odontophorus atrifrons Allen, Bull. Amer. Mus. xiii. pp. 127-128 (1900).

Hab. Valparaiso, Sierra Nevada, U.S. Colombia, 4500-5500 feet.

This appears to be a distinct species most nearly allied to *O. parambæ*, which has been procured in Northern Ecuador and in Antioquia, U.S. Colombia. Certain parts of the description seem, however, to suggest that the bird under consideration may not be fully adult. Dr. Allen writes :—"The scapulars with the inner vanes black, broadly barred and edged with chestnut, *with light shaft-stripes*, and central portion of outer vane gray ; . . . upper breast similar to the mantle (olivaceous gray, vermiculated with black), but varied slightly with buffy white, which takes the form of *ill-defined apical spots* on the lower border of this area ; lower breast ochraceous rufous, with indistinct cross-bars and shaft-stripes of black."

4 B. ODONTOPHORUS PARAMBÆ.

Odontophorus parambæ Rothsch. Bull. B. O. C. vii. p. vi (1898) ; Hartert, Nov. Zool. v. p. 505, pl. iii. fig. 1 (1898).

Hab. Paramba, N. Ecuador ; Antioquia, U.S. Colombia.

10. ODONTOPHORUS GUTTATUS (Cat. B. xxii. p. 439).

Odontophorus consobrinus Ridgw. P. U. S. Nat. Mus. xvi. p. 469 (1893) [Mirador, Vera Cruz, Mexico].

Mr. Ridgway's supposed species is unquestionably founded on two females specimens of *O. guttatus* (Gould) and was correctly placed under the synonymy of that species in the Cat. B. Brit. Mus. xxii. p. 439 (1893).

CRAX SULCIROSTRIS Gocldi, Boll. Mus. Paraense, iii. no. 4, p. 409.

The description (translated) reads as follows :—

"A female which is of the same size as the preceding species (*C. carunculata*). A broad groove runs on each side of the beak from the nasal fossa to near its point. The tarsi resemble those of the preceding species, but are covered in

front with 11 or 12 scutes. The feathers from the front of the vertex to the nape are black, with two broad white bands in the middle. The neck and the head are black. The back and the wings are black, with numerous transverse white lines. Some of these lines are visible on the median rectrices, whilst others are uniform black, all turning to white towards the point. The breast, the lateral parts of the body, and the legs are yellowish, with broad, transverse, black bands; the belly and the under tail-coverts are uniform yellowish. The wing measures 34, the tarsus 10 centim.

“Mus. Paul. Est. de S. Paulo.”

This is apparently based on a female of *Crax pinima*. The description of the plumage agrees almost exactly with that of specimen “c” in the British Museum Collection, described [cf. Cat. B. Brit. Mus. xxii. p. 447 (1893)] as “a second and apparently less mature specimen.” The groove on the bill is probably accidental and of little importance.

16. *ORTALIS CINEREICEPS* (Cat. B. xxii. p. 515).

Ortalis struthopus Bangs, Pr. New Engl. Zoöl. Club, iii. p. 61 (1901) [Arch. de las Perlas, Bay of Panama].

The birds from the Archipelago de las Perlas are separated from typical *O. cinereiceps* (Gray) on account of their “very much smaller and weaker” foot and tarsus. The measurements given are as follows:—

	Tarsus.	Middle toe and claw.
	in.	in.
<i>Ortalis struthopus</i> , ♂	2·32	2·74
“ “ ♀	2·02	2·22
<i>Ortalis cinereiceps</i> , ♂	2·52	3·08
“ “ ♀	2·36	2·56

This difference in size (which, as shown by our series, has no real existence) is, we venture to think, hardly sufficient to entitle the birds from the Archipelago de las Perlas to specific or even subspecific rank.

XVI.—*A Month on the Eddystone: a Study in Bird-migration.* By WILLIAM EAGLE CLARKE, F.L.S. &c.

FOR many years past I have annually made peregrinations to favourably situated localities, both at home and abroad, during spring and autumn, for the purpose of observing the migratory movements of birds. The practical experience thus gained has been of incalculable value to me in the preparation of the various Reports which I have from time to time submitted to the British Association on the subject of Bird-migration in Great Britain and Ireland.

Varied as to time and place and withal successful as these numerous expeditions have been, yet until 1901 I had practically failed to obtain satisfactory knowledge, by direct personal observation, as to one of the most important phases of the phenomenon—namely, that of emigration. That this should have been the case is not difficult to realize when it is remembered that emigration is the movement of all others which is performed under conditions of obscurity. Thus it is chiefly—and entirely in the case of the majority of species—undertaken during the hours of darkness, so that it escapes the notice of all save those few peculiarly placed observers, the light-keepers; and even they, however watchful they may be, witness a mere fraction of the movements that actually take place in close proximity to their stations, for it is only under certain meteorological conditions that the migrants seek the beacon's light and reveal themselves to the watcher, if there be one ready to watch.

I therefore determined, if possible, to spend a month in such a station for the purpose of perfecting my experience in what has long been a favourite study, and in the belief that a trained observer, prepared to devote the whole of his time to the necessary vigils, might, even in so short a period, during the height of the migratory season, add considerably to the knowledge of these important movements.

It required but little consideration to decide that autumn was obviously the best season, that the south coast of England was the best section of our littoral on which to

witness the departure-movements from Britain, and that an ideal watch-tower would be one situated well out in waters of the English Channel, for there the birds could be observed actually *en route* from our Islands to their southern winter-quarters, and there, too, the movements would be free from the complexities, due to coasting-propensities, so common to birds at most land-stations. The famous Eddystone Lighthouse offered all these advantages.

On making known my project to Professor Newton, he, with his characteristic kindness, at once offered his valuable assistance, with the result that, through his instrumentality and that of Sir Michael Foster, my application for permission to reside in the Lighthouse was forwarded to the Trinity House by, and with a strong recommendation from, the Royal Society. The request was most graciously granted by the Elder Brethren, and I took up my residence on the Eddystone on the 18th of September last and remained there until the 19th of October.

Life on a rock-station has, of course, its little trials. He who seeks to dwell therein must, among other things, be prepared to share in all respects the lot of the keepers, and also to be shut off from communication with the outer world until the monthly "relief" comes round, when, weather permitting, his incarceration ends and he returns to the ordinary comforts of everyday life. I may say at once, however, that the novelty of the situation, the interesting nature of my self-imposed work, and last, but not least, the great kindness of the keepers, far outbalanced those little discomforts which are inseparable from such a life; and I shall ever look back upon my sojourn in that lonely observatory with extreme pleasure and satisfaction.

The Eddystone rocks consist of three contiguous reefs, which lie fourteen miles south-west of Plymouth. The central reef is the most extensive, its exposed length at low water being some 150 yards, while its jagged crest then rises about 15 feet above the sea. At high water all the rocks are either submerged or have their highest points awash. The lighthouse stands isolated at the northern extremity of the

main reef, and is a massive structure 168 feet in height. The gallery, which was the scene of my perambulations and vigils, is 130 feet above the sea. The illuminating apparatus consists of a double series of dioptric lenses, one placed above the other, each furnished with a six-wick lamp, and develops the enormous power of 80,000 candles. In clear weather, however, only one lamp is used, full power being burnt when the Breakwater Light at Plymouth, eleven miles distant, is invisible. The light is concentrated into twelve brilliant beams, arranged in pairs, which revolve slowly, taking three minutes to make a complete circuit. On the adjacent reef to the north, and about forty yards distant, stands the basal portion of Smeaton's historic tower, erected in 1758 and in use down to 1882, a memorial to the genius of the founder of the science of lighthouse-engineering.

Landing on the rock is somewhat exciting work, and is effected from a surf-boat towed out by the relief steamer for the purpose. This boat approaches the rock at low water, and anchors some little distance off the lighthouse, while those landing have to dangle from a loop in a rope, clinging to the same with their hands as they pass over the intervening surf, the rope being payed out from the boat and hauled up by the winch in the lighthouse. The only real difficulty about this novel method of landing is to get nicely clear of the bow of the boat, and to avoid dropping into the water when the order "heave away" is given to the men at the winch.

As I anticipated, I found the Eddystone to be favourably situated for observing emigration, and, though it is probably only one among many points at which the Channel is crossed by birds on passage, yet its geographical position must be regarded as somewhat exceptional, since many migrants which have travelled along the west coast of Britain doubtless proceed further south in its proximity. The waters of the Channel in the longitude of the Eddystone—*i. e.* between the easternmost point of the south coast of Cornwall and the westernmost part of Brittany—are 115 miles in width.

The amount of success which it was possible to achieve

during my visit was dependent to an extraordinary degree upon the weather. This was especially the case as regards night movements ; for it must be borne in mind that conditions which are eminently favourable for migration may be, and indeed in most cases are, quite unfavourable for its observation. Successful night observation I found to be entirely dependent upon a combination of meteorological conditions which, while being favourable for emigration, also rendered the lantern attractive to the migrants—a combination which, though not very uncommon, is yet one of which the comparative infrequency results in the great majority of movements being unobserved. The lantern of a light-station is simply a decoy. It is one that I found to “work” only under peculiar conditions, which were dependent upon the amount of moisture (rain, haze, cloud) present in the atmosphere. When moisture is disseminated through the air as a liquid in a state of minute subdivision, the mixture becomes more or less opaque, while the powerful beams streaming out from the lantern upon it become luminous and brilliant to a very remarkable degree, and exert extraordinary attractive powers over the migrants that pass within their sphere of influence. On such occasions the twelve slowly revolving rays from the Eddystone lantern presented a very singular and mystifying appearance, and small wonder was it that the emigrants could not resist their seductions.

My visit included a period when the nights were brilliantly moonlit and cloudless, during which, no doubt, great passage-movements were performed, but they were beyond the range of observation. Gales were not infrequent and arrested emigration.

The first emigratory movement performed during the hours of darkness which I was to witness set in at 3 A.M. on September 23rd. I say “set in,” because just previously to its advent the weather was of such a description as to render migration impossible, owing to the prevalence of a southeasterly gale with a velocity of from 40 to 48 miles an hour.

Just before the time named, however, the wind fell to a moderate breeze, but the heavy rain still continued. Almost immediately after the wind moderated, the birds appeared in numbers, and the scene from the gallery was very remarkable. The birds were flying around on all sides, and those illumined by the slowly revolving beams from the lantern had the appearance of brilliant glittering objects, while the rain shot past on either hand, as I stood on the lee side, like streams of silver beads. I was not a little disappointed to discover how extremely difficult it was to identify the birds seen under such novel and peculiar conditions. Even the conspicuous spots on the breasts of the Song-Thrushes as they flew in the beams towards the lantern were entirely effaced by the dazzling brilliancy of the light, and the smaller species had to be lifted from the lantern ere their identity could be ascertained; while the birds careering around became mere apparitions on passing the rays into the semi-darkness beyond. A number of species undoubtedly escaped detection; but the following are known to have participated in the movement, those marked with an asterisk (on this and other occasions) having been either killed or captured:—Song-Thrushes, *Redstarts, *Sedge-Warblers, *Pied Flycatchers, *Yellow Wagtails, Turtle-Doves, Redshanks, and Curlews. The Song-Thrushes, Yellow Wagtails, and Turtle-Doves were most in evidence.

The Turtle-Doves were a great puzzle; for though they often approached the lantern, yet they recovered themselves sufficiently to avoid striking it, and it was not until day-break, when one was observed resting on the top of Smeaton's tower and another on the dome of the light-house, that the mysterious strangers stood revealed. The Yellow Wagtails captured included both adults and young.

The birds which struck the lantern did so after travelling directly up the beams of light; but a number of them flew high and passed over the dome. The emigrants came from the north and continued to arrive and pass on until 5 A.M., but before the appearance of dawn the movement ceased.

This rush was evidently composed of departing British

summer visitors, spurred to move southwards by the very unsettled weather of the previous few days. I witnessed no second movement of a precisely similar nature, though, no doubt, other fittings away of our summer birds followed; but the nights were brilliantly fine, and the migrants passed southwards unobserved. On this occasion the lantern was attractive to the birds by reason of its rays being rendered unusually luminous as they streamed out on the heavy rain which prevailed.

This movement was followed by several minor emigrations: that is to say, they were less important so far as they came under observation.

On September the 30th, at 9.30 P.M., following a lifting of fog (wind E.S.E., moderate breeze, hazy), *Song-Thrushes, *Meadow-Pipits, *Chaffinches, and other undetermined species appeared. The movement ceased to be observed on the appearance of the moon at 10.45 P.M.

October 1st.—Numbers of *Meadow-Pipits passing from 2 A.M. to 5 A.M. (wind S., moderate breeze). At night, on the rolling away of fog at 9.45, and during intervals of light rain up to 11.15, *Starlings (first) and *Wheatears (first) appeared at the lantern (wind S., moderate breeze, cloudy).

October 10th.—After a gale of three and a half days' duration, the night of the 9th was clear and starlight, with a gentle breeze from the N.N.W.; at 2 A.M. the sky became overcast, and *Song-Thrushes, Mistle-Thrushes (first), Redwings (first), *Skylarks, *Starlings, *Meadow-Pipits, and some undetermined Passerines appeared and were observed until 3.30 A.M. This was the first movement in which Birds of Passage were undoubtedly present—that is to say, species (the Redwing, for instance) which, having arrived in Britain from the Continent, had traversed our shores and were seeking more southerly winter-quarters by crossing the Channel *viâ* the Eddystone.

October 10th–11th.—During passing showers, from 7.15 P.M. to 9 P.M., Song-Thrushes and Skylarks were present. At 4 A.M., under similar conditions, several Starlings were flying round the lantern. (Wind W.S.W., light breeze.)

October 12th.—During slight showers, between midnight and 2.30 A.M., Pipits, Starlings, and Song-Thrushes were flying in the rays. (Wind S.S.E., light breeze; dark; clear.)

Next followed the chief movement of the past autumn witnessed at the Eddystone. This great passage commenced at 7.15 on the night of the 12th of October, and continued without a break until 5.45 on the morning of the 13th. The weather was favourable for both emigration and observation. The wind was a gentle breeze from the north-east, and the very slight haze which prevailed made it necessary to burn full power in the lamps, whose rays were thus not only doubly brilliant but assumed extraordinary luminosity, and hence attractiveness, as they streamed out upon an atmosphere eminently suited for rendering them conspicuous.

The first birds to appear were a few Starlings, and from 7.30 they were present in numbers down to almost the very close of the movement. These were followed, in the order named, up to midnight, by Blackbirds (first), Skylarks, Stonechats (first), Redwings, Fieldfares (first), Wheatears, and Song-Thrushes. To this hour the birds had continued to arrive and pass on in a steady stream, while many struck the lantern. Soon after midnight a great increase in the emigrants was observed, and the movement assumed the character of a rush southwards. Song-Thrushes, Redwings, Mistle-Thrushes, Blackbirds, Starlings, and Skylarks then appeared in vast numbers, and were followed by Chaffinches, Grey Wagtails (several), Goldcrests (first), Fieldfares (first), White Wagtails (several), Meadow-Pipits, and Curlews. At 5 A.M. the movement received an impetus from a fresh arrival of most of the species named; among others, a Grasshopper Warbler struck the lantern and a small party of Wild Geese passed close over the dome, calling loudly as they flew. Most of the emigrants went steadily southwards, but many tarried, and the majority of the species named were present in some numbers until the first signs of dawn, when the movement waned; and at daybreak all, save a few Starlings resting in a dazed condition in the recesses of the windows, had passed

away. There were also many small Passerines and a number of larger birds—probably Waders, from their notes—present during the movement, but their identity was not established. The Skylarks, Starlings, Song-Thrushes, Redwings, and Blackbirds appeared to be the species most numerous represented, and vast numbers of them were observed; but certain of the smaller birds were almost equally plentiful. It would have been possible to have captured some of them in great numbers; and, as it was, the killed or injured and captured included 76 Skylarks, 53 Starlings, 17 Blackbirds, 9 Song-Thrushes, and examples of the Redwing, Mistle-Thrush, Stonechat, Chaffinch, Meadow-Pipit, Grey Wagtail, White Wagtail, Goldcrest, and Grasshopper Warbler (a young female of the year).

I retained the wings and some specimens of all these birds; and the bodies of the various Thrushes and Skylarks were served up at dinner for several days, and proved a most welcome relief from the tedium of salt beef, which had figured daily for some time past as the standing dish of our bill of fare.

A notable and important feature was the continual arrival, down to almost the very close of the movement, of fresh emigrants, not only of individuals of the kinds early noted but of other species which had not previously participated in it; for instance, the Meadow-Pipit did not appear upon the scene until as late as 4.50 A.M. This continuous succession of arrivals indicated, I think, that some of the birds had come from comparatively near localities on the mainland, while others had travelled from afar ere they reached the Eddystone on their flight southwards. The presence of the Redwing and the Fieldfare added an ultra-British complexion to the passage; and it is possible that others among the migrants, perhaps the majority of them, may also have been drawn from sources beyond the limits of the British Isles. In this connection it may be stated that all the Starlings captured at the lantern (on this and other occasions) belonged to the race having a purple head and green ear-coverts, which is said to be of Continental origin. Be

this as it may, it is a fact, not, perhaps, without significance, that the only specimens I have seen of this form elsewhere were obtained at the Spurn Head Lighthouse in the autumn, and were doubtless immigrants.

Throughout the movement, and especially when it was at its height in the earliest hours of the morning, the scene presented was singular in the extreme and beyond adequate description. Resplendent, as it were, in burnished gold, hosts of birds were fluttering in, or crossing at all angles, the brilliant revolving beams of light; those which simply traversed the rays were illumined for a moment only, and became mere spectres on passing into the gloom. The migrants which winged their way up the beams—and they were many—resembled balls or streaks of approaching light, and they either struck the lantern or, being less entranced, passed out of the rays ere the fatal goal was reached. Of those striking some fell like stones from their violent contact with the glass, while others beat violently against the windows in their wild efforts to reach the focal point of the all-fascinating light. Many of those that freed themselves from the dazzling streams came in sharp contact with the copper dome of the lantern, making it resound again, and then fell like flashes into the surf below, followed slowly by a shower of feathers resembling a miniature storm of golden flakes. Finally, above and below the madding crowd in the illumined zone, great numbers of the emigrants flitted around in dim confusion, and in almost weird contrast with the brilliant multitudes gyrating in the adjacent vistas of light. The accompanying babel of tongues was also a striking feature. These were not cries of gratification, but of surprise and alarm; and they varied from the loud rattling notes of the Blackbird and the harsh angry “churr” of the Mistle-Thrush to the faint and dainty twitter of the Goldcrest. Some Skylarks every now and then, under the impulse of excitement no doubt, broke out into a few notes of song. Not a few strange voices were heard, some probably uttered by species with whose ordinary notes one was quite familiar; but migrants, especially Waders, have a travel-talk which is,

as yet, an unknown tongue to most of us. Nor was it an easy matter to promptly assign a familiar note to its rightful throat when heard under such highly peculiar conditions, and to an accompaniment supplied by the roar of the surf on the surrounding reefs.

It was interesting to note the varying degree in which the mesmeric influence of the light was exercised over the different species. The Starling was the most susceptible subject present; and this clever bird became under the sway of the lantern not only a complete fool, but a seemingly willing sacrifice. It was quite fearless and indifferent to the presence of myself and the keepers on the gallery, for it hustled past us in unceremonious fashion to reach the lantern, and, being balked on the threshold by the windows, made vigorous attempts to reach the seductive lamp, and then sat half-exhausted on the sills and sashes, drinking-in, as it were, the light until it became quite stupefied, and when picked off would sit contentedly on one's hand. Great numbers were removed from the lantern and cast over into the darkness below; but many of them immediately returned. The Skylark was nearly as frequent a victim. It came up in great numbers to the light, but not being accustomed to perch on such slight coigns of vantage as the metal framework of the lantern offered, it fluttered violently against the glass for a time and, becoming exhausted, sank prostrate on the gallery*. It would have been quite possible to have captured a thousand Starlings and as many Skylarks. It was otherwise with the various species of *Turdus*. These, though present in equal or even greater numbers than either of the species just alluded to, were not affected to anything like the same degree. The Blackbirds and Song-Thrushes approached the lantern more freely than the rest of their genus, but they had a habit of coming

* I may here remark that I took with me to the Eddystone a quantity of netting, with which I completely surrounded the gallery by hanging it perpendicularly from the railing. The object was to prevent any birds that struck from falling over. It answered admirably, and was the means of saving many birds which would otherwise have been lost.

up to some extent "side on," so to speak, and consequently they glanced off either little stunned or quite uninjured. These birds did not attempt to remain at the lantern, and those which were captured shewed extreme fear. The Red-wing, one of the most numerous species present, was very shy, and still more so were the Mistle-Thrushes and the Fieldfares; the latter only approached the lantern and did not strike.

That this was a great movement, seen under favourable conditions, is evident from the fact that the senior keeper had only once before during his sixteen years' experience seen one of equal magnitude, namely at the Casquets off Alderney. The other keepers had not seen anything like it before. It appears to have been a far-reaching movement, too; for at the Bishop's Rock Lighthouse, south of the Scilly Isles and one hundred miles west of the Eddystone, a considerable migration was in progress at the same time, and Starlings, Thrushes, and Fieldfares are recorded as having been captured at the lantern. It was not, however, a great night for victims apart from Starlings and Skylarks; but had a thick drizzling rain replaced the thin veil of haze, the slaughter would, in the opinion of the keepers, have been appalling, so numerous were the emigrants and so long-continued their passage.

On the night of October 13th–14th, between 6.50 P.M. and 2 A.M., a few *Skylarks, *Starlings, *Song-Thrushes, *Chaffinches, several Turtle-Doves, and a *White Wagtail were observed at or around the lantern. The night was, on the whole, starlight and clear, but there were periods during which it was overcast, and then it was that the birds approached the lighthouse. (Wind E.S.E., gentle breeze.)

The White Wagtail had not hitherto been detected quitting our shores in the autumn. Its occurrence at the Eddystone lantern on the nights of the 13th and 14th of October is of further interest, since the dates are, I believe, the latest on record for the observation of this bird within the British area. Both the examples secured were young birds in winter plumage.

The last of the night-movements during my visit was one of considerable magnitude and remarkable interest. It set in on the night of October 15th, and was in progress until nearly daybreak of the following morning. The meteorological conditions under which it was witnessed were exceptional, and afforded a clear and unmistakable demonstration of the effect of weather-influences and the extent to which we are dependent thereon for rendering the observation of migratory movements possible. In this important respect it was one of the most valuable experiences that I had. The night was bright and starlight until 7.30 P.M.; but from that hour until daybreak the state of the atmosphere was ever oscillating between intervals of brightness and those during which the sky was overcast with a slight degree of haziness, rendering the Breakwater Light at Plymouth invisible, and full power necessary at the Eddystone. The wind was E.N.E. and varied in force from a moderate to a gentle breeze. After a little experience it became possible to tell, by watching the beams of light, what the atmospheric conditions of the moment and the chances of observation were. The beams grew conspicuous when the sky became overcast through the presence of moisture in the atmosphere, and then the birds immediately approached the beacon; but as soon as this condition passed away the rays at once thinned down and became little more than visible, the birds sheared off, and the movement in progress ceased to be observed. During the duration of the periods favourable for observation, between 7.35 P.M. and midnight, the following species were observed:—Song-Thrushes, Mistle-Thrushes, Redwings, Skylarks, Goldcrests, Starlings (first at 10.30), Blackbirds (11.30), Wheatears (11.45), Grey Wagtail, and Stonechats (midnight). At 9.40 a number of Waders passed, but their calls were in an unknown tongue. The period between 11.15 P.M. and midnight was the most productive of results. At intervals between 1 A.M. and daybreak Wagtails, Mistle-Thrushes, Goldcrests, Starlings, Larks, Wheatears, Wrens (1.15 A.M.), Song-Thrushes, Meadow-Pipits (2.30 A.M.), Redwings, Blackbirds, and Storm-Petrels were observed—the

chief periods being from 1 A.M. to 1.45 A.M. and from 2.30 A.M. to 3 A.M.; but some of the species named were observed at intervals until daylight appeared. There was practically no tarrying at the lantern, owing to the attractive periods being so short in duration, and the observations afforded direct evidence that the movement was continuous and that it was in progress for at least ten hours.

The Song-Thrush and the Skylark appeared to be the most abundant species, and the latter was occasionally quite a nuisance at the lantern. The extreme scarcity of the Starling was remarkable, but, on the other hand, the abundance of the Mistle-Thrush was noticeable. The emigrants were at times very numerous, and though the atmospheric conditions were not greatly in favour of many striking the lantern, yet those killed included 11 Thrushes, 8 Larks, 3 Mistle-Thrushes, 4 Blackbirds, and examples of the Meadow-Pipit, Redwing, Goldcrest, Wheatear, Grey Wagtail, Wren, and Storm-Petrel.

I will now treat of the migratory movements observed during the daytime.

It will be well to preface the observations by remarking upon the great difficulty of detecting small birds at sea. This is chiefly to be accounted for by the fact that the surface of the water being ever in motion forms a most unsatisfactory background on which to "pick up" such birds on the wing. Dark or sober-coloured species are especially difficult to detect; but the few that shewed any white in their plumage during flight came under notice almost at once.

The day migrations of land-birds observed, though of considerable importance, were entirely confined to passage movements across the Channel in a due southerly direction. The species participating in these emigrations were few, and consisted chiefly of Meadow-Pipits, several kinds of Wagtails, and Swallows; but the number of individuals was very considerable. A few Willow-Warblers, Linnets, and House-Martins were also observed, but their numbers were

so small, and the occasions on which they appeared so rare, that they do not merit further consideration.

Daily throughout my visit when the weather was favourable, that is to say when a light wind prevailed, no matter from what quarter, the passage of Meadow-Pipits and Wagtails was of regular occurrence. The movements were performed during particular hours only, commencing soon after daylight—*i. e.* from 6.15 A.M. to 7 A.M.—and were entirely over by or before midday. So rigidly were these hours adhered to by the emigrants, that I soon found the afternoons to be quite unproductive, and consequently I regulated my hours of rest accordingly.

The Meadow-Pipits often passed in small parties, consisting of as many as a score, but frequently in twos and threes, and sometimes even singly; while the height of their flight varied from twenty feet, or less, above the water to occasionally as much as two hundred feet, the direction being due south. The birds were observed on emigration, in greater or less numbers, on sixteen days*, during which vast numbers passed close to the lighthouse: the passage being on some days continuous between sunrise and midday. The greatest movements were chronicled between September 30th and October 1st, 2nd, 3rd, 5th, and 15th. They invariably uttered their familiar notes as they flitted by.

On the same days, with hardly an exception, and during the same hours of the morning and forenoon that the Pipits were on the move, Wagtails, singly or in pairs—but never more than three together, and that seldom—were observed moving southwards. The species identified were the Pied, the White, and the Grey Wagtail; but in what proportion I was unable to determine, for it was only occasionally that the birds were seen under conditions which permitted of their being identified with certainty—chiefly when they broke their journey, as they sometimes did, and alighted on the reefs at low water. These birds generally flew at a comparatively considerable elevation, seldom below that of the gallery (130 feet),

* I was 32 days on the rock, and during that period 14 days were entirely unsuited for migration, owing to adverse weather-conditions.

and most frequently over 200 feet. Wagtails were noted as emigrating on thirteen days, and, judging from the continuous nature of their passage on these occasions, great numbers crossed the Channel towards the coast of France.

Swallows were observed passing southwards on seven days; possibly they did so on others, but they were particularly difficult to "pick up," even when close to the tower. On certain days (October 2nd and 15th), considerable numbers passed in small parties of a dozen or so, consisting of both old and young. The movements were all timed between 7 A.M. and 11.30 A.M.; and the first emigrant was noted on September 24th.

No East to West migration of land-birds was observed. That such movements occur regularly on the south-west coast of England during the daytime is well-established; but they are confined to the coast and its immediate vicinity, and their southerly fringe does not appear to extend to the Eddystone.

Few Waders came under notice, which is not surprising, for the pelagic nature of our surroundings offered no attractions to such visitors. The most interesting of the migrants among this group was the Red-necked Phalarope, which appeared singly on two occasions, namely, on the 21st of September and the 1st of October, during unsettled weather. The first of these visitors was a bird of the year, which remained for several hours in the vicinity of the tower, often approaching quite close to its base. The second was an adult in winter plumage, and was also under notice for a considerable time, frequently at close quarters. The 1st of October was a wild day, and the little bird was compelled to seek the lee of the lighthouse to escape the frequent squalls of wind and rain that swept past from the S.W. Both were assiduously and unceasingly engaged in the capture of some minute surface-swimming creatures, probably crustaceans, which must have been very abundant, judging from the lively actions of the Phalaropes in picking round in all directions with the greatest rapidity. They were restless, too, and constantly changed their quarters by a series of flights to

try fresh areas near at hand ; often, however, to return in a few moments to spots which they had just previously quitted. While thus engaged they frequently approached the edge of the reefs and did not seem to mind the buffeting they encountered amid the broken water ; now and then a shower of spray would cause them to rise on the wing, but, nothing daunted, they alighted again as soon as the disturbing element had passed.

On September 29th a small flock of Ringed Plovers passed the lighthouse flying rapidly due south, and evidently bent on crossing the Channel.

The Purple Sandpiper visits the reefs in the late autumn and winter to search for food during low water, returning to the mainland at high tide, when its haunts are submerged. The first bird of the season arrived on the 11th of October, and as many as four were seen from that date onwards. A single Turnstone was observed on the rocks on September 30th—an immature specimen.

A number of migratory marine birds also came under observation. Foremost among these in point of rarity was an example of Sabine's Gull, seen near the tower on the morning of September 29th. This bird was in an interesting stage of plumage, being an adult assuming winter dress. It was most accommodating in its behaviour, since it frequently rose and displayed its deeply forked and entirely white tail, and those conspicuous bands of white which cross the pinions—features which render this species both remarkable and unmistakable when on the wing. It sat on the water more buoyantly than the other Gulls around it, and was in general more elegant in form than any of them.

The next species deserving mention is the Sooty Shearwater (*Puffinus griseus*), described in the 'Birds of Devonshire' as "a very rare accidental visitor" to that county. I saw single examples on September 23rd, and on October 12th (two), 14th, and 19th, the last day being that of my departure. It is possible that this bird was not very uncommon just beyond the range of identification, where the shoals of Pilchards were frequent and proved a great attraction to various other

species. It will be well to mention here the Great Shearwaters. These birds were very common throughout my visit, but were seen in varying numbers ; on some days a few only skimming the waters around the lighthouse, while on others they were extremely abundant. When the immense shoals of Pilchards were in the vicinity, I witnessed some interesting scenes in which this species played a leading part, for it dashed into the water in spirited style to secure its prey ; as did also the less agile Gulls, upon whom, in turn, numerous Skuas were in close and pressing attendance. The whole formed a most animated scene ; one whose interest was occasionally further heightened by the presence of a school of small Cetaceans, which rolled and jumped about in all directions among the much persecuted fish. The Manx Shearwater was frequently seen between the 29th of September and the 14th of October, but was not at all numerous.

To return to the migratory species among the Laridæ. The occurrence of the Great Skua was chronicled on September 23rd, when three examples were observed during a S.E. by S. gale ; single birds were seen on the 1st and 16th of October. The Pomatorhine Skua was very abundant during the period covered by my visit, and was much in evidence when I left. Examples with remarkably developed central tail-feathers, and others in melanistic plumage, were not uncommon. The Arctic Skua was also common, but not nearly so numerous as the last-named species. The abundance of these piratical birds was no doubt due to the presence of vast numbers of Gulls of various kinds, and of these last, in turn, to the great shoals of Pilchards present in the neighbourhood of the Eddystone.

Of the various species of Tern I saw but few examples. This was, no doubt, due to the fact that the vicinity of the reefs, and the deep water that surrounds them, did not afford a suitable fishing-ground. Single examples of the Sandwich Tern were seen on the 25th and 27th of September. A few Common Terns passed on the 22nd, 23rd, 27th, and 28th of September ; and on the morning of the 12th of October two Arctic Terns, in the somewhat uncommonly observed stage

of immaturity which led to birds in that plumage being described as a distinct species under the name of *E. portlandica*, came close to the tower on their way westwards.

Storm-Petrels visited us on five occasions during unsettled weather. On September 22nd they were very abundant during a S.E. by S. gale, when many were engaged on the lee side of the tower in picking up food on the surface of the water, in the shape, I am inclined to think, of small particles of fatty matter from our refuse bucket. A few were seen on the 6th and 8th of October during gales, and one came to the lantern at 2.30 A.M. on the 16th.

When migratory birds did not present themselves, I found much to interest me in the habits of the Gulls, Gannets, Shags, and Cormorants, some of which were always present during the daytime. All the ordinary Gulls were observed, save the Common and the Black-headed species. I noted a fact regarding the food of the Herring-Gull which I have not found recorded in the standard works on British Birds, though it may have been elsewhere, namely, that this bird feeds extensively on seaweed, especially on the kind known as "sea-thongs" (*Himanthalia lorea*). Almost daily masses of this and other weeds drifted past on the tide, and each patch had one or more of these Gulls in attendance, busily engaged in detaching suitable pieces from the long orange-brown strings, which they swallowed with avidity. They often squabbled among themselves for the possession of such food-supplies. I never saw the Lesser Black-backs, which were present in considerable numbers, pay any attention whatever to these flotsam patches of weed.

The Gannets afforded special opportunities for observing their habits. These birds fished round the lighthouse in numbers, and with marked success, when the sea was rough or its surface agitated; but when the sea was calm and its surface glassy, they merely passed on their way to other fishing-grounds, well knowing that it was useless to attempt to capture the wily Pollack, the object of their quest, when there was no ripple on the face of the waters. The best fishing-grounds lay at the very edge of the reefs, and hence

quite close to the tower; and thus from my elevated and fixed point of observation on the gallery I was enabled to gauge the height from which these birds dived with a degree of accuracy not usually attainable. I witnessed many thousands of dives, but in no case did the drops exceed a height of from 130 to 140 feet. About one-fourth of the Gannets seen were in immature dress, all stages being represented except that of the year—a fact which is worthy of note.

The Eddystone was an excellent station for studying the weather conditions and their bearing upon bird-migration.

Birds when performing long flights not unfrequently pass from the zone of favourable weather, which is conducive to their departure, to an area in which the conditions are more or less unfavourable; and they are consequently recorded as arriving on our coasts in the autumn under adverse circumstances. Such inauspicious instances of immigration as these are apt to mislead those interested in the subject, for it is not always borne in mind that it is the state of the weather *at the point of departure* which affords the only indication of the actual conditions controlling the movements.

At the Eddystone, owing to its contiguity to the mainland, one witnessed simultaneously the movements and the meteorological conditions under which the birds elected to set out on their passage southwards; or if no movements took place, either by day or by night, one was able, it being the height of the emigratory season, to determine, in some measure at least, what the weather-barriers were which arrested such migrations. Thus this station was singularly favourably situated—probably none more so—for observing the meteorological conditions which made for or against emigration.

No movements were witnessed, either by day or night, on the part of land-birds under weather conditions which could be described as in the least degree unfavourable for crossing the Channel.

The wind is certainly the main factor in migration-

meteorology, and practically determines what is favourable and what is unfavourable for the movements. From observation, I am convinced that the *direction* of the wind is, in itself, of no moment to the emigrants, for they flitted across the Channel southwards with winds from all quarters *. It is quite the reverse, however, when its force or velocity comes to be considered, and I found that none of the movements, not even straggling flights during the daytime, were performed when the velocity of the wind exceeded 28 miles an hour (or force 5, fresh breeze, of the Beaufort scale). With the velocity of the wind at 34 miles an hour (force 6), odd Pipits and one or two young Swallows were seen in distress, and endeavoured to seek shelter at the lighthouse. The movement witnessed on the early morning of the 23rd of September afforded an interesting instance of the effect of the force of the wind on migration. On the wind falling from a velocity of 40 miles an hour (force 7) to 23 miles an hour (force 4), the other meteorological conditions (direction of wind and heavy rain) remaining the same, a great emigratory movement was initiated.

The prevalence of rain is evidently a matter of indifference to the birds. It is otherwise to the would-be observer, for the beams from the lantern assume additional luminosity during rain, and the birds, if migrating, are decoyed within the range of observation. On clear nights one is entirely dependent upon the intervention of a passing shower to learn whether migration is in progress or not, but on such occasions few birds actually strike the lantern, though many fly around it.

When fog prevailed no birds were observed, though the luminosity of the rays of light then assumes the maximum of its conspicuity, while not penetrating beyond the imme-

* The direction of the wind depends upon the distribution of atmospheric pressure. Certain systems of pressure establish fine weather conditions over the North Sea, and are thus eminently favourable for intermigration between the Continent and the British Isles. Consequently the winds, which are also the result of these particular pressure-systems, have erroneously come to be regarded as the main factors controlling these movements.

diate vicinity of the lighthouse. During fog, charges of tonite are exploded every five minutes and produce a terrific report, which must have a decidedly scaring effect on any approaching migrants, if such there be.

The only migratory species observed during gales were the single examples of the Red-necked Phalarope observed on two occasions. Certain other species, such as Skuas and Storm-Petrels, the latter especially, were much in evidence when the weather was unsettled and the wind high.

An important and interesting point in connexion with the phenomenon of emigration is the hour at which the emigrants set out upon their night movements. This, however, is a very difficult and obscure subject to investigate. No one, so far as I am aware, has ever witnessed the act of birds rising on the wing to depart on their nocturnal journeys; while the observations made at land-stations, which may be considered to bear upon the question, are surrounded by and associated with elements of great uncertainty. At the Eddystone, and other stations situated immediately off the south coast, it seemed possible in the autumn to procure data which might enable us to fix this time of embarkation with some degree of accuracy. To this end I made a series of careful observations on the time of first appearance of emigrants at the Eddystone, and found that on a number of occasions in October this ranged from 6.50 P.M. to 7.15 P.M. The species noted were Song-Thrushes, Skylarks, Starlings, and Chaffinches; but others were sometimes present, though not identified. On the dates on which these observations were made, the hour of sunset ranged from 5.30 P.M. to 6 P.M., but darkness did not ensue until about 6.15 P.M., or a little later. It is fair to assume that these earliest birds to appear had only a short time previously set out from localities contiguous to the shores of the mainland, some twelve miles distant. Taking these facts into account, I have come to the conclusion that when the weather conditions at the hour are favourable, the initial movement for crossing the Channel is embarked upon almost immediately after darkness prevails. During each major movement witnessed, neither the species

nor the individuals of a species appeared simultaneously, though sometimes several kinds arrived in company, and thus the passages were a succession of arrivals practically down to their close. Here we have evidence, I think, that certain of the emigrants had journeyed from districts more or less distant ere the Channel was reached on the voyage southwards.

On each occasion when a number of birds of any species was killed at the lantern, it was interesting to note how considerably they varied in size, and some, though to a less degree, in colour. The Skylarks, 76 in number, obtained during the great movement of October 12th–13th, shewed the remarkable range of wing-measurement of from 4·70 in. to 3·85 in.; the Starlings, obtained on the same date and 53 in number, from 5·38 in. to 4·85 in.; and the Meadow-Pipits from 3·37 in. to 2·91 in. The Skylarks and Meadow-Pipits exhibited some variation in colour, difficult to describe in words, but quite manifest to the observer. It is possible that more than one race of the two last-named species was represented during the movement, or it may be, in the case of all three species, that the peculiarities in size, &c., were due, in a greater or less degree, to age or sex, or both in combination.

As regards the characters which may distinguish the various continental representatives of many of our commonest species we as yet know extremely little; while the age of certain birds in the late autumn is not an easy matter to determine, nor do the histories of their plumages at that season appear to be sufficiently well known to help us to reliable conclusions on this point.

Wing-measurements are valuable as an indication of the range of variation within species, but speculations based upon ordinary material are apt to be extremely misleading. Here, again, sex and age, alone or in combination, may, and do, account for much of the variation to be found, and yet how insignificant are the data in our possession which afford these essential particulars!

As bearing directly upon these remarks, I will instance a

few cases that came under my notice at the Eddystone. In addition to those of the Skylarks and the Meadow-Pipits (which shewed a very considerable variation in size and certain peculiarities of plumage *inter se*, though all were obtained during single movements), the Starlings killed on the night of Oct. 12th–13th were all of one race, namely, the purple-headed form, and yet the wings of the males varied from 5·38 in. to 5·0 in. (four being over 5·25 in.) and of the females from 5·15 in. to 4·85 in. (13 being over 5 in.). Some, probably most, of this remarkable variation was due to age, much to individualism, none to race. This influence of age was well illustrated in the Blackbirds obtained; the wings of all the young males measured from ·30 to ·40 in. less than the adult. To be of any real use, beyond, of course, the important one of identification, all wings should be accompanied by the age and sex of the specimen from which they were taken, and it is important, where possible, to obtain a number of examples from the same movement. Until these essential data are forthcoming, it is impossible to realize the true significance of wing-measurements, and it is worse than useless to draw deductions from them.

On the question of the young and old birds travelling together or apart on their migrations, or in what species they do so, my observations at the Eddystone throw some light. Swallows, both adults and juveniles, were observed passing in company during the daytime; and young and old of the Mistle-Thrush, Redwing, Blackbird, Wheatear, Stonechat, Yellow Wagtail, and Skylark were obtained together at the lantern at night.

Since I left the Eddystone, the keepers have furnished me with a series of carefully filled-in schedules, wherein are recorded in detail all the observations up to date. I succeeded in thoroughly interesting them in the work.

A pleasant duty remains. I have to express to the Elder Brethren of the Trinity House my gratitude for the privilege they so graciously granted me. My thanks are also tendered to Captain Reading and to G. F. Treleavan, Esq., for the information and assistance they so kindly afforded me; and

to the light-keepers, Messrs. Ayers, Gilpin, and Hambling, for their great kindness, attention, and co-operation on all occasions during my residence on the rock. To Professor Newton and Sir Michael Foster my grateful acknowledgments are due for the kindly interest they took in the furtherance of my project: without their influential aid my visit to the Eddystone would not have been accomplished.

XVII.—On *Anser erythropus* and its Allies.

By J. H. GURNEY, F.Z.S.

MR. F. COBURN, of Birmingham, has announced in 'The Zoologist' (1901, p. 317) an event of considerable interest to British ornithologists, namely, that a Lesser White-fronted Goose, *Anser erythropus* (= *A. minutus* Naum.), was killed during the preceding January in Norfolk. I understand that this rare bird was taken in the Wash, and sent along with some Coots and Knots to a poulterer in Birmingham Market by a reliable fisherman at King's Lynn, but, of course, it is as likely to have been obtained on the Lincolnshire side as in Norfolk. The weather, when it was shot, was fine with westerly winds. Mr. Coburn has since been good enough to give me an opportunity of comparing his specimen with several examples of the White-fronted Goose (*A. albifrons*), and as its beak, which is the important feature, is intermediate in size between those of its two allies, I hope that a few remarks will not be out of place with a view to further establishing its identity, and also the specific value of the three closely allied species, *A. albifrons*, *A. erythropus*, and *A. gambeli*.

The American species, or subspecies, *A. gambeli* Hartl., is generally recognisable by its comparatively large beak and its blacker underparts. It ranges over the whole of North America, while there are three specimens in the Natural History Museum from Japan, where its range meets that of *A. erythropus*. Details of its distribution are given in 'North American Birds,' vol. i. pp. 448-454, and in the 'Catalogue of Birds,' vol. xxvii. p. 95. Opinions differ as to

whether it is found in Greenland, but in any case it is the New World representative of the other two forms.

Since Professor Newton first discriminated between *A. albifrons* and *A. erythropus* (P. Z. S. 1860, p. 339) the marks by which the latter has been held to be distinguishable from *A. albifrons* are its much smaller size, its distinctly

Fig. 6.

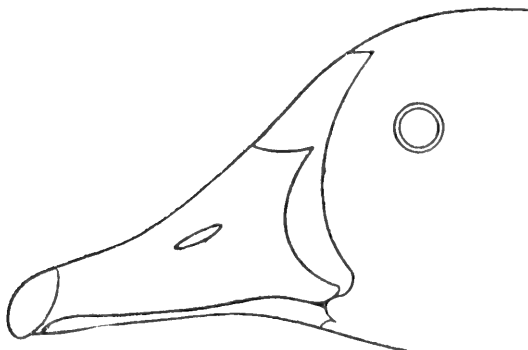
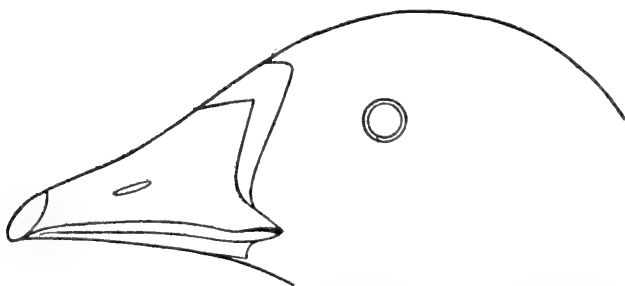
Outline of the head of *Anser erythropus*. (The Wash, England.)

Fig. 7.

Outline of the head of *Anser erythropus*. (The Delta, Egypt.)

smaller beak, and the slightly darker tint of its plumage, more particularly beneath the wing, though this cannot be said to be apparent in Mr. Coburn's specimen. The white of the face and forehead is generally more extended in *A. erythropus*, reaching backwards to a point between the

eyes, as will be seen from the accompanying figure of Mr. Coburn's bird (fig. 6, p. 270). For further comparison I think it advisable to give an outline of the head of an Egyptian example of *A. erythropus* (fig. 7, p. 270). Another important point is that in *A. erythropus* the eyelids are yellowish, making a definite circle round the eye (*cf.* Ibis, 1901, p. 451).

Mr. Coburn's Goose may possibly be nearly adult, but I doubt the fact, for it has not much black on the under surface, although shot in the month of January; he considered the skull smaller than that of *A. albifrons*, and the eye-sockets nearer to the base of the bill—an osteological difference which, though slight, may be important.

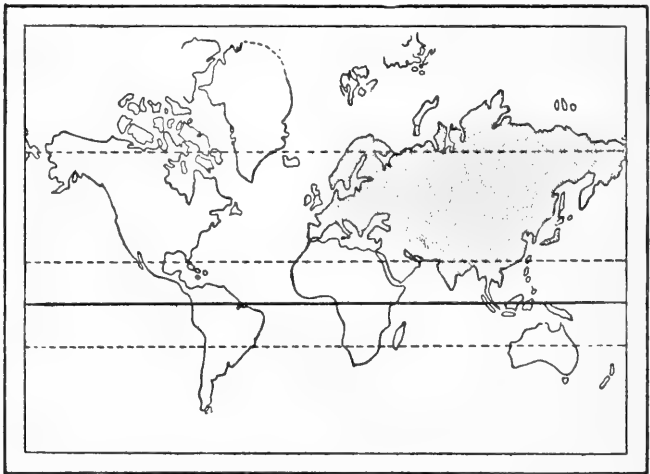
His bird measured 22 inches in length before it was skinned, whereas the length of a fine *A. albifrons*, also preserved by him, was 26·5, and that of another measured by me was 27.

Its legs, when he received it, were deep reddish orange, having probably changed to that colour from yellow; the bill was fleshy yellow, the nail white with a pink tinge; the irides were hazel. The colour of the soft parts, and especially of the beak, is a very important feature in Geese, but needs to be noted immediately after death or in life. Linnæus, when he described *A. erythropus* as having "*rostrum sordide carneum . . . pedes sanguinei*," probably had before him an example of this species; but it must have been one which had been several days dead, and Pallas, unless he copied from Linnæus, must have been misled in the same way (Zoogr. Rosso-As.). Even Bishop Gunner does not give the colour correctly (see Prof. Newton's translation of Gunner in Bree's 'Birds of Europe').

It may be worth while briefly to sketch the distribution of *A. erythropus* so far as it has been distinguished from *A. albifrons*, which inhabits the greater part of Europe and Asia, but is the less northern species of the two. The nearest place to the British Isles where *A. erythropus* breeds is the Lofoten Islands in the north of Norway; thence it extends eastwards to Lapland and Finland and throughout

the Russian Empire to the great Yenesei River (Seebohm and Popham). It reaches China (Ibis, 1892, p. 490) and Japan, and has been recently obtained in Burma by Col. Rippon. Mr. Blanford writes of it as "a very rare cold-weather immigrant in Northern India," and examples have been lately procured at Calcutta (*cf.* Finn, P. A. S. Beng. 1898, p. 1). It has been repeatedly shot in Greece, where it is said even to breed. It not infrequently comes as near to us as Denmark and Holland (see Zoologist, 1885, p. 33), and M. Dubois cites two occurrences in Belgium (November 1856 and winter of 1858), while Mr. Howard Saunders examined one in Italy (Ibis, 1869, p. 395). As might be expected, it is occasionally obtained in Northern Egypt in winter (see P. Z. S. 1876, p. 414). The accompanying map (fig. 8) will best shew its distribution.

Fig. 8.

Map showing the distribution of *Anser erythropus*.

There are some naturalists who would unite the three White-fronted Geese under one name, but this seems an unscientific way of treating the question, and so long as the slightest difference in colour—even to the colour of an eyelid—can be found, combined (as it is in their case) with

some difference of habitat, surely such birds ought to be kept asunder. In the 'Catalogue of the Birds in the British Museum,' xxvii. pp. 92-99, the three forms are treated as distinct species by Count Salvadori, who evidently had a good series of skins before him. I think that there is less difference between *A. albifrons* and *A. gambeli* than there is between *A. albifrons* and *A. erythropus*, but, if a new species, *Anser neglectus* (cf. Ibis, 1897, plate ii.) can be put in between *A. brachyrhynchus* and *A. segetum*, all the three White-fronted Geese ought surely to stand also, from a separatist's point of view.

Some British-killed examples of *A. albifrons* are very black indeed on the under surface, and, in fact, have little colour except black on the lower breast and belly. One of these dark examples (killed in Co. Mayo) was sent by Mr. Coburn to a meeting of the Norwich Naturalists' Society along with his *A. erythropus*, and another is particularly referred to in Ussher's 'Birds of Ireland' (p. 170) as having been shot at Baronscourt. These Geese may have flown across the Atlantic Ocean, and thus be regarded as veritable *A. gambeli*, or they may be hybrids. *A. erythropus* is also very black occasionally, judging from the plate in Bree's 'Birds of Europe,' the only representation of it published in this country, and one which must have been taken from a very black-bellied example.

It is highly probable that *A. gambeli* occasionally breeds with *A. albifrons*, and *A. albifrons* with *A. erythropus*, hybrids being thereby produced. The authors of 'North American Birds,' i. p. 450, mention a cross between *A. gambeli* and *Bernicla occidentalis*, and M. Suchetet notes another supposed cross between *A. albifrons* and *B. brenta* (Ois. hybrides, p. 739). There are other instances of Geese interbreeding, as at Lilford, where a White-fronted goose paired with a Bean gander (Zoologist, 1894, p. 214), shewing that there is nothing at all improbable in a union between any two of the three closely allied White-fronted Geese.

The following comparative measurements begin with those

of *A. gambeli* having the culmen 2·35 in., and gradually diminish to those of an example of *A. erythropus* having the culmen barely 1·2 in., a very great difference indeed; my measurements are taken from the tip of the beak to the commencement of the frontal feathers:—

	Culmen. in.	Tarsus. in.
<i>A. gambeli</i> . 'N. Amer. Birds,' by Baird, Brewer, & Ridgway, i. p. 449	2·35	3·10
<i>A. gambeli</i> . Cat. of Birds in B. M. xxvii. p. 97. .	2·3	
<i>A. albifrons</i> . Leadenhall Market, January. Im- mature	2·1	2·8
<i>A. gambeli</i> ?, ♀. California, February 1855, in Cambridge Museum	1·9	2·8
<i>A. albifrons</i> , ♀. Islay, N.B., January	2·0	2·6
<i>A. albifrons</i> , ♀. Co. Mayo (F. Coburn)	1·8	2·4
<i>A. albifrons</i> , ♀. Egypt, March	1·7	2·3
Mr. Coburn's example, ♀ (<i>A. erythropus</i> ?), from the Wash, shot in January	1·5	2·4
<i>A. erythropus</i> , ♂. Northumberland, September. Immature	1·4	2·2
<i>A. erythropus</i> , ♀. Siberia, June. (Dresser, B. of E. vi. p. 383.)	1·3	2·2
<i>A. erythropus</i> . Delta of the Nile, January 1875. Immature	1·2	2·2

A. erythropus was first introduced as a British bird at a meeting of the Zoological Society of London held in November 1886, when a young male, shot by Mr. A. C. Chapman on the coast of Northumberland, was placed upon the table; of this Mr. Chapman has given a full account in 'The Field' of Dec. 11th, 1886 (vol. lxviii. p. 87), where he states that it weighed only 2½ lbs., which is 2 lbs. less than Mr. Coburn's bird. Indeed, so small is *A. erythropus* that it has been compared to an Eider Duck and even to a Mallard: one shot on the Yenisei by Mr. Popham weighed 4¼ lbs. The weight of *A. albifrons* is given in Mr. Harting's 'Handbook Brit. B.' ed. 2, at 6½–7 lbs., but that is much more than the weight of two Norfolk examples weighed by me, which were 5 lbs. and 4¾ lbs. respectively. Another specimen of *A. erythropus*, the head of which I saw, was shot in January 1888 in Somersetshire, but it was supposed to have escaped from

captivity * (Zool. 1888, p. 176). A third example had been previously seen (about 1874) by the late Mr. J. Cordeaux in a game-shop at Grimsby (B. Humber District, p. 22).

In October 1871 an immature White-fronted Goose, with a very short beak, was bought in Leadenhall Market, which puzzled my father and me, but which I now think was *A. erythropus*; whether it was British-killed or not it is impossible to say. This was a young bird and the general tone of its plumage was distinctly dark, a feature noticed by the late Mr. Seebohm (P. Z. S. 1886, p. 420), but which I am afraid is not constant. It had no bars on the breast or belly, a fact which in all the White-fronted Geese has been regarded as a mark of immaturity, but I have known an example of *A. albifrons* to live about four years on a pond at Cromer without acquiring bars.

XVIII.—*Further Notes on the Birds of the Outer Hebrides.*

By J. A. HARVIE-BROWN, F.R.S.E.

MANY striking changes in the Avifauna of the Outer Hebrides have been brought to the notice of ornithologists since I visited the group along with Colonel Feilden in the year 1870, though whether some of these changes are not more apparent than real is a point which cannot at present be regarded with absolute certainty. Personally, however, I am of opinion that most of the new records are due to an extension of range of the species, whether on migration or otherwise, while it is an undoubted fact that certain birds are incomparably more plentiful than they were even in 1888, when the 'Fauna of the Outer Hebrides' issued from the press.

To these changes then I particularly desire to draw attention in this paper, now that a large mass of fresh information has been collected by personal investigations and by the aid of many kind correspondents; and I hope to publish in an early part of the 'Annals of Scottish Natural History' full details regarding the species concerned.

* Four or five examples of this Goose have lived in the Gardens of the Zoological Society of London at different times.

Referring to the lists given below, it will be noticed that Thrushes and Warblers have either increased in numbers or else that our knowledge of their occurrences has become much more perfect. The increase in these cases may perhaps be explained by the planting of trees that has taken place in such districts as Barra. Very noticeable is the record of the Barred Warbler, and still more so that of the Subalpine Warbler, the latter being new to the British List. Not a single Tit has as yet been reported from the Outer Hebrides; on the other hand, we are able to announce the appearance of the Red-breasted Flycatcher, of the Greenland Redpoll, and of a second specimen of the Blue-throated Warbler. The Swallow, the Rook, and the Lesser Tern now breed within the group, and the numbers of Swans and Ducks are said to be greatly augmented. The occurrences of the Red-necked Phalarope vary considerably from year to year, but are probably neither increasing nor decreasing. The Chough, reported as extinct in the 'Fauna of the Outer Hebrides,' has again made its appearance, while we are beyond measure glad to learn that the Sea-Eagle has fairly held its own since 1888. The foreign wild-fowl, introduced upon Lord Dunmore's property at Rodel, seem to have entirely disappeared. The occurrence of a Corn-Crake in winter is remarkable.

The sources of my information have been many and various. Subsequently to a tour in 1870, when Colonel Feilden and I explored Harris, North Uist, Barra, and South Uist, not to mention the smaller islands, I returned to Newton in North Uist in 1879, and spent several weeks there before leaving for St. Kilda with Professor Heddle. The Shiant Islands, the Hysgeir group off N. Uist, the Flannan Islands, and N. Rona were visited between that year and 1885—all in the spring or early summer. In 1887, I began a series of trips in the yacht 'Shiantelle,' built at Fraserburgh, in the course of which I reached N. Rona, Souliskerry, Stack-&-Skerry (*sic*), and eventually Shetland; and I visited the Færoes in the yacht 'Daydream' in 1894. In consequence I have been able to add greatly to my store

of information, and to give most careful attention to the verification of the notes made in previous years. The schedules from the lighthouses which have passed through my hands on their way to Mr. Eagle Clarke for incorporation in the "Migration Reports" have been also a fruitful source of knowledge; while Mr. W. Macgillivray of Eoligary, Dr. John McKury of Barra, Mrs. Platt (tenant of the deer-forest of the Park), Mr. Andrew McElfrish of Loch Maddy, Messrs. A. and A. C. Chapman, with many other sportsmen and naturalists, have done me the greatest service in forwarding full accounts of their observations in the group. Many old friends among the proprietors and their factors have also been kind enough to further my investigations, which have extended almost up to the present time.

It only remains for me to mention the visits paid to the lonely Rockall in the North Atlantic in the s.s. 'Granuaile' in 1896*, when the following twenty species of birds were noticed:—*Sula bassana*, *Tringa alpina*, *Numenius phaeopus*, *Sterna minuta*, *Sterna* —?, *Larus fuscus*, *L. argentatus*, *L. canus*, *Rissa tridactyla*, *Stercorarius catarrhactes*, *S. pomatorhinus*, *S. parasiticus*, *S. crepidatus*, *Alca torda*, *Uria troile*, *Fratricula arctica*, *Fulmarus glacialis*, *Puffinus gravis*, *P. griseus*, and *Procellaria pelagica*.

I. List of Species new to the Outer Hebrides since 1888.

NAME.	LOCALITY.
Barred-Warbler (<i>Sylvia nisoria</i>)	Barra.
Subalpine Warbler (<i>S. subalpina</i>)	St. Kilda.
Wood-Warbler (<i>Phylloscopus sibilatrix</i>)	North Uist.
Sedge-Warbler (<i>Acrocephalus phragmitis</i>)	Barra.
Great Grey Shrike (<i>Lanius excubitor</i>)	Barra.
Waxwing (<i>Ampelis garrula</i>)	Stornoway.
Red-breasted Flycatcher (<i>Muscicapa parva</i>)	Monach Isles Lighthouse.
Siskin (<i>Chrysomitris spinus</i>)	Barra.
Goldfinch (<i>Carduelis elegans</i>)	North Uist and ? Mingulay.
Greenland Redpoll (<i>Linota rostrata</i>)	Barra (3 specimens).
Crossbill (<i>Loxia curvirostra</i>)	Barra.
Carrion-Crow (<i>Corvus corone</i>)	N. Uist (<i>McElfrish</i>) (first shot).

* Trans. Roy. Irish Acad. xxxi. pt. iii. pp. 66-75, pls. ix.-xi.

NAME.	LOCALITY.
Nightjar (<i>Caprimulgus europæus</i>)	Eilan Ghlaiss Lighthouse, Harris.
Night-Heron (<i>Nycticorax griseus</i>)	Benbecula.
Green Sandpiper (<i>Totanus ochropus</i>)	S. Uist.
Black-tailed Godwit (<i>Limosa belgica</i>)	Benbecula and S. Uist.
Lesser Tern (<i>Sterna minuta</i>)	Barra.
Ivory-Gull (<i>Pagophila eburnea</i>)	Stornoway.
Great Skua (<i>Megalestris catarrhactes</i>)	Harris and Barra.

II. List of Birds which are bracketed as doubtful in the
‘Fauna of the Outer Hebrides,’ and from which the
brackets may now be removed.

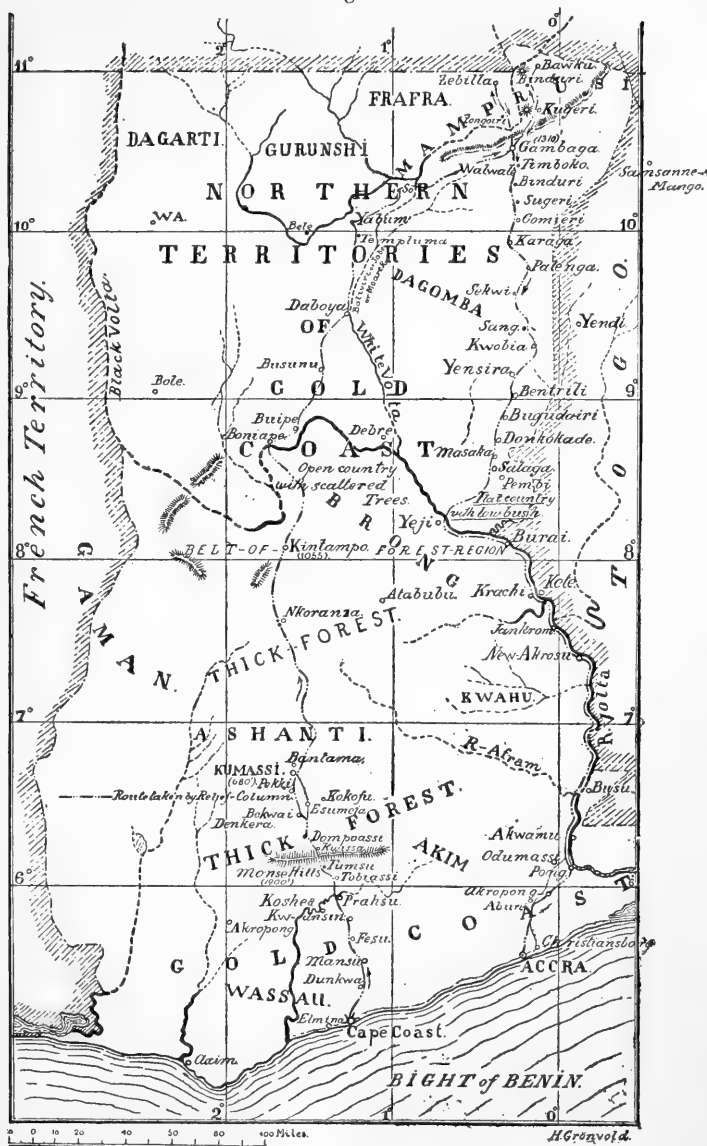
Lesser Whitethroat (<i>Sylvia curruca</i>)	Barra.
Garden-Warbler (<i>S. hortensis</i>)	Barra.
Chiffchaff (<i>Phylloscopus rufus</i>)	Barra.
Lesser Redpoll (<i>Linota rufescens</i>)	Barra.
Long-eared Owl (<i>Asio otus</i>)	N. Uist and Barra.
Bittern (<i>Botaurus stellaris</i>)	Harris.
Spoonbill (<i>Platalea leucorodia</i>)	S. Uist and Barra.
Shoveller (<i>Anas clypeata</i>)	Benbecula.
Goosander (<i>Mergus merganser</i>)	The Lews.
Turtle-Dove (<i>Columba turtur</i>)	Several islands.
Grey Phalarope (<i>Phalaropus fulicarius</i>)	Barra and Loch Maddy.

XIX.—On the Birds of the Gold Coast Colony and its
Hinterland. By Capt. BOYD ALEXANDER.

(Plate VII.)

ON the morning of June 1st, 1900, I landed at Cape Coast, and, as a Haussa officer, found myself attached to the Kumassi Relief-Column. The Ashanti rebellion was in full swing. Sinister rumours regarding the fate of Kumassi were rife. The town, being full to overflowing, presented an animated spectacle: traders from up-country, who had barely escaped with their lives, and natives with wild looks in their eyes frequented the streets; while by each mail-boat troops, war-like stores, and hundreds of carriers kept pouring in. Throughout June the troops were concentrated at Prahsu, and preparations were made for the general advance to Kumassi. The military operations gave me little time and opportunity to carry out my scientific work, but

Fig. 9.



MAP OF GOLD COAST COLONY.

(From Stanford's 'West Africa,' with additions and corrections by Capt. ALEXANDER.)

during my absence at the front my Portuguese collector, José Lopez, did excellent work, and obtained examples of many scarce and little-known species of birds. There were many difficulties to contend with. The rainy season had set in, the leaves dripped with moisture, and water knee-deep blocked the forest-paths; while a small native mud-but with a leaky roof and a heavy damp atmosphere were sufficient to prevent my skins from drying properly. As the country became more settled, my collector worked his way gradually up to Kumassi, and, owing in a great measure to the consideration shown to him by officers and men alike of the Field Force, he was enabled to make important collections at each station on the lines of communication. In the forest, with its thick undergrowth and high trees, the 12-bore gun with No. 8 shot was the most useful, while the small "410" collecting-guns served us well in the less enclosed portions.

From Cape Coast the forest extends for about 200 miles inland. The ground rises by gentle gradients, till the Monse Hills, 1900 feet in height, are reached. Here the ascent is very steep, but afterwards there is a gradual fall to Kumassi, where the level is 690 feet.

Sometimes the narrow footpath passes through deep streams and stagnant pools, at other times through utter darkness, where gigantic bamboos meet overhead and form a thick covered way, dank and steamy. On first entering the forest, a sense of relief from the burning sun is experienced, but this soon gives way to a feeling of depression. The eternal dull green of the foliage, unrelieved by any shafts of light, offers no change to the eye, and the huge columns of the india-rubber- and cotton-trees, once objects of wonder, soon cease to become so from their very number.

But the forest is not all like this; for there are spots where the sun can penetrate. In such localities, and in the vicinity of villages and spaces cleared by the natives for their farms, the bird-life is wonderful. Weaver-birds in gorgeous breeding-plumage—some studies in yellow, others in scarlet and black—make a buzzing chatter in the tall forest-trees. The "lu-lu" cry of a Golden Oriole (*Oriolus nigripennis*)

breaks, at intervals, the distant silence, while, close to the traveller, the hurried notes of a Babbling-Thrush (*Cossypha verticalis*) come from the cool depths of the forest-thicket. Where the sun is strongest, the beautiful metallic hues of a Sun-bird (*Cinnyris*), as it hovers round some tree in full blossom, often catch and please the eye. Then, towards evening, the discordant screech of the Grey Parrots grates upon the ear from time to time, as they journey with rapid flight, high above the tree-tops, to some favourite feeding-place. Away from such spots as these bird-life is scarce.

As the Relief-Column wound its way onward, the deep silence was broken only by the brushing sound of the underwood against the khaki clothing of the men, or now and again by the mellow trill of a Babbling Bush-Thrush (*Cossypha*) deep in the thicket, following the column as if it had a dread of being left alone in the stilly darkness. On the last day of the march, as the column crept nearer Kumassi, the silence became, if anything, more intense. Men spoke in whispers. By the shadow, the sun was setting somewhere to our left. Everything seemed peaceful. The Thrush was still pouring out its trill of pretty notes, and gave me intense pleasure. Hardly had a minute elapsed before the report of two dane-guns from the enemy's out-posts rolled towards us, and the forest that before was silent as the grave, now rang with the report of firearms.

After a three hours' fight the Ashantis were driven into the forest, and our men, like a column of soldier-ants whose journey has been temporarily checked, once more assumed close order and crept into the beleaguered fort.

In November 1900, I left Kumassi with a column of Haussas for Gambaga, the headquarters of the Northern Territories—a three weeks' trek. The transport from the coast is by carriers, who are always a worry and a nuisance. Fantees, Ashantis, and Wongaras are the natives generally employed, the last being by far the best and most useful. It is a very expensive method of conveyance, since by the time a load of 56 lbs. has reached Gambaga—a distance of about 500 miles—the cost comes to over fifty shillings.

After the fourth day of our journey the forest became less thick, and the Kola-nut tree (*Cola acuminata*) was plentiful. The trade in Kola-nuts in the countries north of the Gold Coast is most important. In the dry season, large caravans of cattle, bred in Moshi, and in the districts about the River Niger, pass through Gambaga and Salaga on their way to Ashanti, where the cattle are exchanged for Kola-nuts, which the merchant takes back with him into the Soudan, where they are much prized and are in great demand.

At Kintampo (1055 feet), eight days' march from Kumassi, the forest gives way to stretches of undulating country, which rise gradually to Gambaga. Kintampo marks the southern boundary of the Northern Territories. The western frontier is formed by the Black Volta River, the northern by the 11th parallel of north latitude, and the eastern by the German province of Togoland.

The country here is covered with dwarf trees—chiefly acacias and a species with long scanty leaves—interspersed with scrub and coarse grass. The latter grows to a height of nearly six feet during the rainy season, and causes, in many places, impassable obstacles, until it has been burnt by the natives after the rains. The country is watered by two large rivers—the Black Volta and the White Volta,—which separate at the village of Debre, and by other smaller affluents and streams, which generally retain water throughout most of the year and become much swollen during the rains. Along the banks of these rivers and streams there are belts of thick woodland, interspersed with large well-proportioned trees and groves of small bamboos; and these belts, always green, mark the windings of the watercourses through stretches made monotonous by dry grass and the almost uniform expanse of stunted tree-growth. Beyond Gambaga (1310 feet), to the northward, the land-level falls 700 feet, and the country becomes less undulating, while it is uplifted here and there into cone-shaped hills of from 100 to 600 feet in height, the tree-growth giving way in many localities to open stretches, covered with guinea-corn and maize.

The climate of the Hinterland is far better than that of the coast and the forest-region, and the fever is there of a mild form. The rainy season is from July to November, commencing in Ashanti a month earlier. By the end of October signs of the dry season appear, and then only occasional showers are experienced. Towards the end of November the Harmattan sets in, increasing in strength in December, and lasting till the middle of February; under its dry and searching influence everything becomes dried up, and the birds leave the open country and seek shelter in the belts of woodland along the streams and watercourses.

Near Gambaga many important forms of bird-life, including several rare Desert-Larks, such as *Heliocorys modesta* and *Mirafr erythropygia*, were obtained, both in the district itself and to the northward near the Anglo-French boundary, as also in the little-known country around Salaga.

In our Hinterland collection, all the forms are either Senegambian or Abyssinian. There is hardly a forest-species represented in it, as the list will shew. With the exception of the forest-region, it is difficult to define any exact areas of distribution for West-African birds. The fact of species from North-eastern Africa being found right up in the Gold Coast Hinterland shews that no serious obstacle to a wide distribution exists throughout the little-known countries directly south of the Sahara, which form, as it were, a roadway between the Nile and Senegambia. According to Lieutenant Joalland of the French Mission to Lake Chad, the country about Zinder, in Northern Haussaland, has an abundant supply of water, the region along the northern shore of Lake Chad is barren and absolutely devoid of food, while Kanem is a series of sand-dunes and oases.

A system of rivers must influence to a great extent the distribution of birds. This is readily perceived on watching the banks and vicinity of the African rivers, for there numbers of birds may be seen congregated and continually moving up and down their courses. These migration-move-

ments take place in the dry season, when food and water are scarce in the open country.

A glance at the map (p. 279) will shew what a network of watercourses there is between Senegambia and the Nile.

At the beginning of May, 1901, I left Gambaga and trekked to Salaga, and thence on to the River Volta at Yeji, where I took a canoe down to Pong. From this place a two days' trek brought me to Accra. The Volta, which is over 300 yards wide in places, is a beautiful river; its course is very erratic, and the banks are clothed with belts of trees, while here and there the water is broken by groups of rocks, causing rapids, which add to the beauty of the scenery. It is doubtful whether this fine river could ever be utilized for steam-transport, on account of these rapids.

The following is a list of the species of birds obtained during my expedition, references being added to prior observations on the birds of the Gold Coast and Togoland, and usually to the B. M. Catalogue, with field-notes where there is anything special to record.

I have followed the arrangement of Capt. Shelley in the first volume of his 'Birds of Africa.' My best thanks are due to Mr. W. Ogilvie-Grant for much help in the identification of my birds.

1. *HEDYDIPNA PLATURA* (Vieill.).

Hedydipna platura Hartert, Nov. Zool. vi. p. 415 (1899) (Gambaga).

Nectarinia platura Gadow, Cat. B. ix. p. 10 (1884).

Observed in pairs at Gambaga. In December the males of this species were in full breeding-plumage.

2. *NECTARINIA PULCHELLA* (Linn.).

Nectarinia pulchella Gadow, Cat. B. ix. p. 7 (1884); Hartert, Nov. Zool. vi. p. 415 (1899) (Gambaga); Shelley, B. Afr. ii. p. 23 (1900).

Gambaga, many specimens. In April and May adults in breeding-plumage were abundant.

3. *CINNYRIS CUPREUS* (Shaw).

Cinnyris cupreus Gadow, Cat. B. ix. p. 55 (1884);

Reichen. J. f. O. 1891, p. 391 (Togoland); id. J. f. O. 1897, p. 47 (Togoland); Hartert, Nov. Zool. vi. p. 415 (1899) (Gambaga); Shelley, B. Afr. ii. p. 36 (1900).

Abundant in the open country—Cape Coast Castle, Accra Plains, Volta River, and the Hinterland. At Kintampo, where the forest gives way to open country covered with scrub and bush, these little Sun-birds were very numerous in November, either threading their way through the undergrowth or crowding round the tops of the tall trees then in blossom. From March to June adult males were met with; at the end of November immature birds were beginning to assume the adult plumage.

4. *CINNYRIS SUPERBUS* (Shaw).

Cinnyris superbus Gadow, Cat. B. ix. p. 48 (1884); Reichen. J. f. O. 1897, p. 47 (Togoland).

This is essentially a forest-bird, of which specimens were obtained at Prahsu and Kwissa. We never met with it at Cape Coast Castle, nor at Kintampo outside the forest-belt. In the open spots in the forest, where the sun can penetrate and flower-vegetation is luxuriant, this Sun-bird is plentiful. It is very partial to the young fruit-buds of the paw-paw tree. At the end of June, the middle of the rainy season, adults in perfect plumage were obtained, and in October immature males were assuming the full plumage.

5. *CINNYRIS JOHANNÆ* Verr.

Cinnyris johannæ Verr. Rev. et Mag. Zool. 1851, p. 314; Gadow, Cat. B. ix. p. 49; Shelley, B. Afr. ii. p. 43 (1900).

Specimens obtained at Fumsu and Prahsu.

6. *CINNYRIS SPLENDIDUS* (Shaw).

Cinnyris splendidus Gadow, Cat. B. ix. p. 50 (1884); Reichen. J. f. O. 1891, p. 392 (Togoland); id. J. f. O. 1897, p. 47 (Togoland); Shelley, B. Afr. ii. p. 45 (1900).

This is by far the most abundant Sun-bird in the Colony. In June, around Cape Coast and even in the town itself, we found it numerous, frequenting the tulip-trees (*Bombax*), then in blossom. Unlike *C. superbus*, this species is not found in the forest, but haunts rough bush-covered localities

on its outskirts. We procured specimens at Cape Coast and also at Kintampo, but never found it in Ashanti.

This species appears to pass through several well-defined stages of plumage before that of the adult is assumed. We may divide these stages into four :—

1st stage (nestling).—Like the female, but throat and fore-neck dull blackish.

2nd stage.—Throat and fore-neck metallic purple.

3rd stage.—Metallic purple on throat and fore-neck more intense ; breast and abdomen clear yellow.

4th stage.—Adult plumage, the crown being the last to assume the metallic colouring.

At Cape Coast, in June, we obtained adult males in full breeding-dress. At the same time young males were in the *second* and *third* stages of plumage.

At Kintampo, in November and December, we killed immature males in the *fourth stage*—*i. e.* the adult plumage, with the exception of a few feathers, was practically assumed.

In the British Museum there are two males, killed at Accra in February, in the *second* stage of plumage ; and another male, obtained in August from Senegal, in the same state.

Therefore we have examples of immature birds obtained in February, June, November, and December (months practically embracing the whole year) passing through several phases of plumage, each in its way complete and shewing no direct transitional change.

From this it would seem that it takes at least a year for the young bird to assume its full plumage.

7. CINNYRIS CHLOROPYGIUS (Jard.).

Cinnyris chloropygius Gadow, Cat. B. ix. p. 34 (1884) ; Reichen. J. f. O. 1897, p. 46 (Togoland) ; Shelley, B. Afr. ii. p. 83 (1900).

Nectarinia chloropygia Shelley & Buckley, Ibis, 1872, p. 287 (Gold Coast).

Specimens from Prahsu and Kwissa.

8. *CHALCOMITRA SENEGALENSIS* (Linn.).

Chalcomitra senegalensis Shelley, B. Afr. ii. p. 89 (1900).

Cinnyris senegalensis Gadow, Cat. B. ix. p. 94 (1884); Reichen. J. f. O. 1897, p. 46 (Togoland).

It was not till we reached Gambaga that we noticed this species. It is the common Sun-bird of the Hinterland, resorting to the belts of trees which line the banks of the small watercourses. In December we found it in pairs in full breeding-plumage, frequenting open ground and flying from one low bush to another. At the end of April, when the first rain was experienced, a large tree with shiny leaves, common along the banks of the streams, broke out into white blossoms, like those of our horse-chestnut. These trees were immediately besieged by numbers of this Sun-bird, both old and young, the males predominating to a large extent. They were full of activity, the males keeping up a continual chattering—a musical chirp, not unlike that of a Sparrow. The gradations of plumage through which the young bird passes until adult plumage is attained are well defined:—

(a) Nestling; similar to the female, but throat and fore-neck dull black.

(b) Chin, upper throat, and chest assuming the adult coloration.

(c) Breast and underparts following suit.

(d) Upper parts, moustachial band, and crown also in full plumage.

This same process of change of plumage is followed in *C. gutturalis* (cf. Ibis, 1899, p. 560).

9. *CHALCOMITRA ADELBERTI* (Gerv.).

Cinnyris adelberti Gadow, Cat. B. ix. p. 99; Reichen. J. f. O. 1897, p. 46 (Togoland); Shelley, B. Afr. ii. p. 112. Prahsu and Fumsu.

Not common, keeping much to the tops of the tall forest-trees in the neighbourhood of the native villages.

Our immature males, killed in August, have no metallic colouring, and are similar to the female, except that the chin

and upper throat are blackish brown and the lower throat buff, thus shewing a perfect plumage in itself.

10. *CYANOMITRA OBSCURA* (Jard.).

Cyanomitra obscura Shelley, B. Afr. i. no. 63 (1896).

Cinnyris obscura Gadow, Cat. B. ix. p. 77 (1884); Reichen. J. f. O. 1897, p. 46 (Togoland).

Prahsu.

Not common. Breeds in Ashanti at the end of August.

11. *CYANOMITRA VERTICALIS* (Lath.).

Cyanomitra verticalis Gadow, Cat. B. ix. p. 30 (1884); Reichen. J. f. O. 1897, p. 46 (Togoland); Shelley, B. Afr. ii. p. 127 (1900).

Cape Coast.

12. *CYANOMITRA CYANOLÆMA* (Jard.).

Cyanomitra cyanolæma Shelley, B. Afr. ii. p. 130 (1900).

Cinnyris cyanolæma Gadow, Cat. B. ix. p. 78 (1884).

Prahsu, but by no means common.

13. *ANTHOTHREPTES IDIUS* Oberh.

Anthreptes idius Oberholser, Pr. U.S. Nat. Mus. xxii. p. 33 (1899).

Adult ♂, Prahsu, 16/10/00.

Adult ♀, Prahsu, 7/7/00.

This species, of which two specimens were obtained at Prahsu, is very close to *A. fraseri*, but appears to differ in being smaller, with the outermost primary only half as long, and in being rather darker and less yellowish green on the wings and tail.

We have not had the opportunity of examining the type of *A. idius*, but our examples agree pretty well with the description; on the other hand, our adult male agrees with a specimen in the British Museum from Gaboon (*Du Chaillu*).

In the British Museum there are also typical examples of *A. fraseri* from Comma River, Gaboon, and Fernando Po. These are considerably larger in measurement than our

specimens, the outermost primary is twice as long, and the wings and tail are more yellowish green.

This Sun-bird is, in our opinion, a small northern race of *A. fraseri*, and ranges from Liberia to the Gaboon, where it meets and overlaps the range of the southern race, *A. fraseri*.

14. *ANTHOTHREPTES LONGUEMARI* (Less.).

Anthothreptes longuemarii Gadow, Cat. B. ix. p. 115 (1884); Reichen. J. f. O. 1892, p. 236 (Togoland); id. J. f. O. 1897, p. 45 (Togoland); Shelley, B. Afr. ii. p. 144 (1900).

One adult male from Krachi.

15. *ANTHOTHREPTES HYPODILA* (Jard.).

Anthothreptes hypodila Gadow, Cat. B. ix. p. 117 (1884); Shelley, B. Afr. ii. p. 151 (1900).

Prahsu.

16. *ANTHOTHREPTES GABONICA* (Hartl.).

Anthothreptes gabonica Shelley, B. Afr. i. p. 6 (1896).

Nectarinia gabonica Sharpe, Ibis, 1872, p. 72 (Fantee, Volta R.).

Adult male, Krachi.

17. *ZOSTEROPS SENEGALENSIS* Bp.

Zosterops senegalensis Gadow, Cat. B. ix. p. 181 (1884); Shelley, B. Afr. ii. p. 173 (1900).

Kintampo, Gambaga, and Krachi.

This species has not been obtained previously in the Colony nor in the Hinterland. It is curious that Capt. Giffard did not meet with it at Gambaga in 1898. The bird is, however, by no means common; it is generally to be found in pairs, searching quietly for insects about the new buds of the trees.

18. *PARUS LEUCOMELAS* Rüpp.

Parus leucomelas Rüpp. N. Wirb., Vög. p. 100, pl. xxxvii. fig. 2 (1838).

Parus leucopterus Sharpe, Ibis, 1870, p. 480 (R. Volta);

Reichen. J. f. O. 1891, p. 392 (Togoland); Hartert, Nov. Zool. vi. p. 415 (Gambaga).

Gambaga and Karaga.

Found in small parties on waste plateaux covered with shrubs.

The male has a pretty song, which it utters as it shoots up into the air.

About the middle of April pairs were abroad with their young.

19. *PARISOMA PLUMBEUM* (Hartl.).

Parisoma plumbeum Sharpe, Cat. B. iv. p. 269 (1879); Reichen. J. f. O. 1897, p. 26 (Togoland); Shelley, B. Afr. ii. p. 217.

Krachi, in worn plumage.

20. *SALPORNIS SALVADORII* (Bocage).

Salpornis salvadorii Gadow, Cat. B. viii. p. 330; Shelley, B. Afr. ii. p. 260.

Gambaga and Sekwi.

This species has not been obtained previously on the Gold Coast. Our two specimens agree with one in the British Museum procured by Emin Pasha at Tobbo. In examples in the Museum from Angola and Nyasaland the rufous wash on the under parts is considerably stronger than in our two examples, and the terminal spots on the feathers of the upper parts are better defined. The plumage of our birds, however, is much worn, for they were obtained in the breeding-season, the male specimen having the sexual organs largely developed.

This Tree-creeper is never found where the growth is thick, but in localities where the trees stand as far apart as they do in our English orchards. It is without doubt a rare bird, since from our experience it is by no means shy, while its remarkable spotted plumage is bound to attract attention as it travels along the spreading arms of a tree. During four months of collecting only two specimens were observed or obtained. The natives, moreover, appear to have no name for it.

Adult ♂, Gambaga, 2/4/01. Total length (measured in the flesh) 5·7 inches, wing 3·7, culmen ·07, tail 2·4, tarsus 0·4. Iris brown; upper mandible brown, lower horn-coloured; legs and feet brown.

Adult ♀, Sekwi, 9/5/01. Total length (measured in the flesh) 5·2 inches, wing 3·4, tail 2·3, culmen ·075, tarsus 0·4.

21. MOTACILLA FLAVA Linn.

Motacilla flava Sharpe, Cat. B. x. p. 516, pl. vi. figs. 3-5 (1885) (Gold Coast); Shelley, B. Afr. ii. p. 286 (1900).

Budytes flavus Reichen. J. f. O. 1891, p. 390 (Togoland); Reichen. J. f. O. 1897, p. 43 (Togoland).

On April 22, 1901, several parties of these Wagtails put in an appearance for the first time at Gambaga. Another batch appeared by the Prah River, Oct. 26, 1900.

22. ANTHUS TRIVIALIS Linn.

Anthus trivialis Sharpe, Cat. B. x. p. 543 (1885); Reichen. J. f. O. 1891, p. 390 (Togoland); Reichen. J. f. O. 1897, p. 42 (Togoland).

Single individuals were now and then observed from December onwards, and a specimen was obtained at Gambaga in March.

23. MACRONYX CROCEUS (Vieill.).

Macronyx croceus Sharpe, Ibis, 1870, p. 481 (Fantee); Reichen. & Lühd. J. f. O. 1873, p. 217 (Accra); Ussher, Ibis, 1874, p. 70 (Volta); Reichen. J. f. O. 1897, p. 42 (Togoland).

First observed at Gonieri, near Salaga, and thence by the Volta down to Accra. We have no record of this species from Gambaga, nor from the west of the Hinterland. It breeds in May.

24. MIRAFRA BUCKLEYI (Shelley).

Calandrella buckleyi Shelley, Ibis, 1873, p. 142.

Mirafra buckleyi Sharpe, Cat. B. xiii. p. 599.

Our specimens obtained at Gambaga in January and February are in fresh plumage: the vinous on the crown, nape, and mantle is very distinct; while the wing-coverts

and secondaries are broadly edged with pale tawny. The majority of those obtained at Accra in June are in worn breeding-plumage; the vinous on the upper parts and the pale edgings to the wing-feathers have disappeared through abrasion, and the general appearance of the upper parts then becomes pale brown and more uniform.

Owing to the red soil at Accra, the under parts of several of our specimens obtained there are rufous. This Lark is plentiful on the rough scrubby plains around Accra, but further inland in the Hinterland it becomes scarce. At Gambaga it was occasionally observed, generally towards evening, flying for a short distance and then dropping vertically to the ground. In June we found this species breeding; the male birds were constantly to be seen rising vertically into the air for a short distance with a peculiar whirring sound of the wings and then shooting straight as an arrow to earth again.

Adult ♂, Gambaga, 28/1/01. Total length (measured in the flesh) 5·3 inches, wing 2·7, culmen ·05, tarsus ·07. Iris brown; upper mandible brown, lower one bluish horn-coloured; legs and feet whitish flesh-coloured.

The sexes are alike in plumage and dimensions.

25. *MIRAFRA ERYTHROPYGIA* (Strickl.).

Mirafra erythropygia Sharpe, Cat. B. xiii. p. 619; Reichen. J. f. O. 1891, p. 390, 1897, p. 43; Hartert, Nov. Zool. vi. p. 414 (1899) (Gambaga).

Although Capt. Giffard obtained a single example of this rare Lark at Gambaga in 1898, we did not meet with the species in that locality, but we eventually obtained four specimens in worn breeding-plumage at Karaga, near Salaga, which lies near the western boundary of the Hinterland. They were very shy and difficult to approach, frequenting the patches of yam-plantation and using the newly-made hillocks as look-out posts. When disturbed, they would often take refuge in some neighbouring thick-leaved tree, or rise to a considerable altitude in widening circles, dropping quickly to earth again as soon as the cause of

danger had disappeared. In flight the rufous underneath the wings is conspicuous.

The adult male of this Lark differs from the female in being more rufous on the wings and tail. The primaries are broadly edged with rufous on their outer webs, while the outer tail-feather is entirely rufous.

The female equals the male in measurements.

The range of this Lark is across Africa from the Gold Coast Hinterland on the west to the White Nile on the east.

26. *PYRRHULAUDA MELANOCEPHALA* (Licht.).

Alauda melanocephala, Licht. Verz. Doubl. p. 28 (1823).

Fringilla otoleucus, Temm. Pl. Col. iii. pl. 269. figs. 2, 3 (1824).

Pyrrhulauda otoleuca Ogilvie-Grant, Bull. B. O. C. xii. p. 14.

We first observed this species on Dec. 23, 1900, near Walwali (lat. 10° 30' N., long. 1° W.). At Binduri, about 40 miles to the north of Gambaga, the bird was again met with on Feb. 20, 1901. There the country is very open, and is in places grown over with guinea-corn and long grass interspersed with short stunted trees. A small dried-up watercourse, with banks of loose stony soil covered by dry grass, was the resort of this species. The birds were in flocks, which consisted of males only, the majority of them being immature.

They were very shy, continually getting up out of gunshot, and with an erratic and dancing little flight disappearing in ever-increasing circles out of sight. The note is a tiny "twit-twit" rapidly repeated.

The two adult males which we obtained had their organs in breeding condition. The immature birds in the flock must have belonged to the first broods.

The stomachs of those obtained contained small grass-seeds.

The Black-headed Bunting-Lark ranges from Senegambia to the Niger on the west and thence across Africa to the White Nile, where it meets and overlaps the range of its nearly *P. leucotis*. It differs principally from the latter in having

the white collar on the hind-neck broader and the lesser wing-coverts white in place of black.

The type of this interesting species came from Senegal, and there are five specimens from that locality in the Berlin Museum. Mr. Hartert procured examples of it near Sokoto and Wurmer (Nigeria) in 1886.

In February, 1901, we killed five specimens in the Gold Coast Hinterland, where this species appears to be a rare bird, since Capt. Giffard makes no mention of it during his stay at Gambaga in 1898.

Adult ♂, Binduri (Gold Coast Hinterland), 24/2/01. Total length (measured in the flesh) 4.4 inches, wing 3, culmen .034, tarsus .06. Iris hazel; bill horny slate-coloured; legs and feet white.

27. GALERITA MODESTA Heugl.

Heliocorys modesta Sharpe, Cat. B. xiii. p. 623.

Heliocorys modesta giffardi Hart. Nov. Zool. vi. p. 415 (1899) (Gambaga).

Adult ♂ ♀ ♀, Sugeru, 3/5/01. Adult ♂ ♂ ♀, Gambaga, 27/12/00. Adult ♂ ♂ ♀, Karaga, 5/5/01. Adult ♀, Binduri, 20/2/01.

After a careful examination of our fine series of this rare little Lark and a comparison with the examples in the British Museum from Equatorial Africa, I am unable to recognise the validity of the proposed subspecies *H. modesta giffardi*.

According to Mr. Hartert, the characteristics of the subspecies are (a) slightly paler coloration, (b) fore-neck and chest more heavily marked.

These differences in plumage are in my opinion merely due to seasonal change.

Our specimens, killed at the beginning of May, just before the rainy season, are freshly moulted. The feathers of the whole of the upper parts are blackish brown edged with tawny buff, more broadly on the wing-coverts and secondaries, while similar edgings obscure to a great extent the markings on the fore-neck and chest; the breast and abdomen are white washed with tawny, and the crest-feathers are long.

Specimens in this plumage would be typical *Mirafra bucolica* of Hartlaub (Zool. Jahrb. ii. p. 327).

At the end of December, these Larks were breeding at Gambaga, and our four specimens killed at that time are much worn in plumage, while another obtained in February is still more so. In this condition the tawny-buff edgings to the feathers of the breast and upper parts have nearly disappeared through abrasion, the blackish-brown centres to the feathers have become blotched; while the breast and abdomen are white, the tawny wash having disappeared. The general appearance, therefore, of the plumage is much paler and the spots on the fore-neck and chest appear heavier, a state of things brought about by the tawny-buff edgings to the feathers having worn off.

A specimen in the British Museum obtained at Kudurma (near Lado), Nov. 14, 1882, is identical with these birds, which in this plumage are typical of the subspecies *H. m. giffardi*.

Furthermore, our specimens agree well in measurements with examples of *H. modesta* in the British Museum.

This Lark is by no means common and is a very local species. We came across it for the first time at Gambaga at the end of December, which was the breeding-season. A female, killed on the 29th of that month, contained eggs fully formed. It frequents waste land close to kopjes, underneath the rocks of which the bird nests. During the breeding-season it is next to impossible to flush it, and the only time that we saw it on the wing was in May, when the old birds were in flocks, frequenting the newly-sown fields of guinea-corn. They emit a small piping note.

28. EMBERIZA AFFINIS Heugl.

Emberiza affinis Heugl. J. f. O. 1867, p. 297; Sheiley, B. Afr. i. p. 18.

A scarce bird and only once obtained, at Gambaga.

29. EMBERIZA CABANISI (Reichen.).

Emberiza cabanisi Sharpe, Cat. B. xii. p. 503; Reichen. J. f. O. 1891, p. 390 (Togoland); Reichen. J. f. O. 1897,

p. 42 (Togoland); Hartert, Nov. Zool. vi. p. 414 (1899) (Gambaga).

Gambaga.

This species differs from *E. major* in having the mantle strongly marked, and no white streak down the centre of the crown, both these parts being almost uniform as opposed to the black crown of *E. major*, while the white on the throat extends lower down.

The female is smaller than the male; the whole of the upper parts are browner; the feathers of the crown, mantle, and rump have scarcely any pale ashy margins; and the white of the chin and eye-streak is washed with orange, the latter colour extending to the chest.

This beautiful Bunting is decidedly scarce and local, frequenting the bush and tree-growth on the banks of streams.

30. FRINGILLARIA SEPTEM-STRATA (Rüpp.).

Fringillaria septemstriata Sharpe, Cat. B. xii. p. 559; Hartert, Nov. Zool. vi. p. 414 (1899) (Gambaga); Grant, Ibis, 1900, p. 157.

Gambaga and Gomieri.

A scarce and locally distributed species, frequenting, as a rule, stony land sparsely covered with bush. It was breeding at Gambaga in January. In May the two specimens obtained had just completed their moult from the breeding-plumage. The chestnut on the wings and under parts was then considerably brighter, as well as the ash-grey on the chin and throat. In our specimens the rufous wedge-shaped mark along the inner web of the outer tail-feather is absent, although it is to be found in the Abyssinian specimen in the British Museum.

This species has not yet been recorded from Togoland, although we obtained specimens near the border of that country. It appears to range across Africa from the Niger to Abyssinia.

31. PETRONIA DENTATA (Sund.).

Petronia dentata Sharpe, Cat. B. xii. p. 295; Hartert, Nov. Zool. vi. p. 414 (1899) (Gambaga).

Walwali, Gambaga, and Karaga.

This species ranges across Africa from the Niger to Abyssinia.

The upper parts of our adult females are uniform fulvous brown, with only a few Sparrow-like markings on the feathers of the mantle; superciliariystreak buffy white; upper mandible brown, lower one pale horn-coloured: the immature birds are like the adult female, but have the Sparrow-like markings on the mantle heavier; wing-coverts and secondaries tipped with white; no yellow spot on throat; under parts paler; inner webs of quills below pale rufous; legs and feet slate-coloured. In fully adult males the bill is black.

32. *PASSER DIFFUSUS* Smith.

Passer diffusus Sharpe, Cat. B. xii. p. 336; Reichen. J. f. O. 1897, p. 41 (Togoland).

Passer simplex Fraser, P. Z. S. 1843, p. 52 (Gold Coast); Shelley & Buckley, Ibis, 1872, pp. 282, 290 (Gold Coast); Reichen. & Lühd. J. f. O. 1873, p. 216 (Accra).

Passer diffusus thierryi Reichen. Orn. Monatsb. 1899, p. 190 (Manga); Hartert, Nov. Zool. 1900, p. 45.

Ad. ♂ ♂ ♂ ♂ ♂, ad. ♀ ♀, Gomieri, May 4, 1901.

Not met with at Gambaga nor in the west of the Hinterland. From Gomieri, near Salaga, down to Accra, this Sparrow is common.

33. *SERINUS ICTERUS* (Bonn. et Vieill.).

Serinus icterus Sharpe, Cat. B. xii. p. 356 (1888); Shelley, B. Afr. i. no. 285 (1896).

Serinus butyraceus Hartert, Nov. Zool. vi. p. 414 (Gambaga).

Crithagra chrysopygia Sharpe, Ibis, 1870, p. 482 (Fantee); Shelley & Buckley, Ibis, 1872, p. 290 (Gold Coast).

Crithagra chrysopogon Gordon, Contr. Orn. 1849, p. 9 (Gold Coast).

Common at Gambaga and elsewhere.

34. *VIDUA PRINCIPALIS* (Linn.).

Vidua serena Hart. Nov. Zool. vi. p. 413 (Gambaga).

Vidua principalis Sharpe, Cat. B. xiii. p. 203.

Pong.

35. *COLIOPASSER MACRURUS* (Gm.).

Penthetria macroura Reichen. J. f. O. 1897, p. 40 (Togoland).

Penthetriopsis macrura Sharpe, Cat. B. xiii. p. 220 ; Reichen. J. f. O. 1891, p. 388 (Togoland).

Cape Coast, Kwobia, Krachi, Pong, and Binduri.

Binduri, near Gambaga, was the northernmost locality determined for this Weaver-bird. It is essentially a species to be found in marshy places—about river-beds and on low-lying ground near the coast. In May the males were in full breeding-dress. It is difficult to assign any exact season when the breeding-plumage is attained. We obtained several adult males in winter dress in May. It is quite possible that the black breeding-dress is not assumed till the second year.

36. *PYROMELANA FRANCISCANA* (Isert).

Euplectes franciscana Reichen. & Lühd. J. f. O. 1873, p. 215 (Accra).

Pyromelana franciscana Sharpe, Cat. B. xiii. p. 233 ; Reichen. J. f. O. 1897, p. 40 (Togoland) ; Hartert, Nov. Zool. vi. p. 413 (Gambaga).

Accra.

In June this Weaver-bird was in full breeding-plumage.

37. *PYROMELANA FLAMMICEPS* (Sw.).

Pyromelana flammiceps Sharpe, Cat. B. xiii. p. 228 ; Reichen. J. f. O. 1897, p. 40 (Togoland) ; Hartert, Nov. Zool. vi. p. 413 (Gambaga).

Cape Coast.

During our stay at Gambaga, from January to May, this species was not observed, although Capt. Giffard obtained a male specimen there in August.

Around Cape Coast and Accra, where there are damp reedy localities, this bird was plentiful and in breeding-dress. It is probable that after the nesting-season partial migrations occur further inland to the drier situations. This observation also applies to *P. franciscana*.

38. *PYROMELANA PHÆNICOMERA* (Gray).

Pyromelana phænicomera Sharpe, Cat. B. xiii. p. 239 (1890).

We procured a single adult female of this species in winter plumage at Kwobia. There is an example in the British Museum, obtained in Camaroon in September by Sir H. Johnston; it is in partial moult, but the feathers of the crown and nape approach those of our bird very closely in coloration and markings. We shall for the present refer our specimen to the Camaroon species.

39. *PYROMELANA AFRA* (Gm.).

Pyromelana afra Sharpe, Cat. B. xiii. p. 241.

One female from Karaga.

40. *QUELEA QUELEA* (Linn.).

Quelea quelea Sharpe, Cat. B. xiii. p. 257; Shelley, B. Afr.

i. p. 25.

Binduri, north of Gambaga.

Found in large flocks.

41. *UROLONCHA CANTANS* (Gm.).

Uroloncha cantans Shelley, B. Afr. i. p. 27 (1896).

Ædemosyne cantans Sharpe, Cat. B. xiii. p. 371.

Obtained in the Hinterland at Gambaga. Dr. Rendall procured two specimens near Bathurst, Gambia (*cf.* Ibis, 1892, p. 221).

42. *NIGRITA EMILIÆ* Sharpe.

Nigrita emiliæ Sharpe, Ibis, 1869, p. 384, t. xi.; Ussher, Ibis, 1874, p. 68 (Gold Coast); Reichen. J. f. O. 1875, p. 41 (Togoland).

A young male from Prahsu.

43. *SERMESTES BICOLOR* (Fraser).

Spermestes bicolor Sharpe, Cat. B. xiii. p. 261; Ussher, Ibis, 1874, p. 70 (River Volta); Reichen. J. f. O. 1897, p. 40 (Togoland).

Prahsu.

This species breeds in August, forming a domed nest of

dry grass, which is placed between the small branches of a tree, generally an acacia.

44. *SPERMESTES CUCULLATUS* Sw.

Spermestes cucullata Sharpe, Cat. B. xiii. p. 264; Reichen. J. f. O. 1892, p. 222 (Togoland); Shelley, B. Afr. i. p. 28.

Ad. ♂, 10/1/01, Gambaga. Ad. ♂ ♀, 6/4/01, R. Volta (Gambaga). Ad. ♂, Pong, 26/5/01.

Gambaga, R. Volta, and Pong.

Not common, found in small flocks.

45. *ORTYGOSPIZA ATRICOLLIS* (Vieill.).

Ortygospiza atricollis Sharpe, Cat. B. xiii. p. 270.

Obtained at Binduri, north of Gambaga.

46. *GRANATINA PHENICOTIS* (Sw.).

Estrilda bengala Reichen. J. f. O. 1897, p. 39 (Togoland); Hartert, Nov. Zool. vi. p. 414 (Gambaga).

Common, obtained at Gambaga and Gomieri.

47. *ESTRILDA CINEREA* (Vieill.).

Estrilda cinerea Sharpe, Cat. B. xiii. p. 394; Shelley, B. Afr. i. p. 29.

Karaga and Krachi.

In the male the under parts are brighter than in the female, but the dimensions are the same.

48. *ESTRILDA MELPODA* (Vieill.).

Sporæginthus melpodus Sharpe, Cat. B. xiii. p. 325; Reichen. J. f. O. 1891, p. 389 (Togoland).

Ad. ♂ ♀, 11/11/00, Kumassi. Imm. ♀, 30/11/00, Kintampo. Ad. ♂ ♀, 11/5/01, Kwobia.

Kumassi, Kintampo, and Kwobia.

The immature bird has the whole of the breast and abdomen pale buff, contrasting with the light pearly grey of the throat and fore-neck. The crown of the head is almost uniform with the light chocolate-brown of the back. The lores, feathers round the eye, and ear-coverts are less bright than in the adult.

This species is plentiful around Kumassi, consorting

together in large flocks. We found a number of nests attached to the high elephant-grass, which we cleared away the day after the Fort had been relieved.

49. *ESTRILDA CAPISTRATA* Hartl.

Estrilda capistrata Hartl. J. f. O. 1861, p. 259; Sharpe, Cat. B. xiii. p. 390, note (1890).

Pytelia sharpii Sharpe, Cat. B. xiii. p. 303 (1890).

Pytelia capistrata (Hartl.); Reichen. J. f. O. 1897, p. 39 (Togoland).

Adult ♂, 22/5/01, Krachi.

50. *LAGONOSTICTA NIGRICOLLIS* (Heugl.).

Lagonosticta nigricollis Sharpe, Cat. B. xiii. p. 286; Hartert, Nov. Zool. vi. p. 413 (Gambaga); Alexander, Bull. B. O. C. vol. xii. p. 12 (Gambaga).

Rare, found at Gambaga and Binduri.

51. *PYTELIA PHÆNICOPTERA* Sw.

Pytelia phænicoptera Sharpe, Cat. B. xiii. p. 301; Hartert, Nov. Zool. vi. p. 413.

Gambaga, but not common.

52. *SPERMOSPIZA HÆMATINA* (Vieill.).

Spermospiza hæmatina Sharpe, Cat. B. xiii. p. 498; Reichen. J. f. O. 1891, p. 389, et 1897, p. 38 (Togoland).

An adult male was obtained at Prahsu.

53. *PLOCEIPASSER SUPERCILIOSUS* (Rüpp.).

Ploceipasser superciliosus Sharpe, Cat. B. xiii. p. 248; Hartert, Nov. Zool. vi. p. 413 (1899) (Gambaga).

A pair was obtained at Gambaga. This species is locally distributed; it lives in small colonies.

Our specimens agree with examples from Abyssinia and with another from Senegambia in the British Museum.

54. *ANAPLECTES MELANOTIS* (Lafr.).

Anaplectes melanotis Shelley, B. Afr. i. p. 35; Hartert, Nov. Zool. vi. p. 414 (Gambaga).

Occasionally observed.

55. *MALIMBUS BARTLETTI* Sharpe.

Malimbus bartletti Sharpe, Cat. B. xiii. p. 479 ; Reichen. J. f. O. 1897, p. 36 (Togoland).

Sycobius malimbus Reichen. u. Lühd. J. f. O. 1873, p. 214 (Aguapim).

Prahsu, Fumsu, Kwissa, and Kumassi.

Immature individuals resemble the adult female, but have the hinder crown and sides of the neck dull crimson, while the black forehead is slightly washed with crimson. The bill is brown.

This species keeps to the thick portions of the forest, and is seldom seen (like other Weaver-birds) in open spots.

56. *MALIMBUS MALIMBICUS* (Daud.).

Malimbus malimbicus Sharpe, Cat. B. xiii. p. 480 ; Reichen. J. f. O. 1897, p. 36 (Togoland).

Sycobius nigriceps Hartl. J. f. O. 1855, p. 360 (Gold Coast).

Prahsu and Fumsu.

In our series of eight examples, it is curious that we did not obtain any females. Two of them, however, are sexed "♀"; these are not strongly crested. I am inclined to think that the female of this species will be found similar in plumage to the male, with the exception of the crest being less developed and the crimson of the crown not extending so far back.

57. *MALIMBUS NITENS* (Gray).

Malimbus nitens Sharpe, Cat. B. xiii. p. 481.

An adult male from Kwissa.

58. *MALIMBUS SCUTATUS* (Cass.).

Malimbus scutatus Sharpe, Cat. B. xiii. p. 482.

Three examples from Fumsu.

59. *MELANOPTERYX ALBINUCHA* (Bocage).

Melanopteryx albinucha Sharpe, Cat. B. xiii. p. 477.

Prahsu and Fumsu.

Locally distributed, and found in small parties at the tops of the highest forest-trees. During the day, and

especially towards evening, the birds may be observed flying from their high points of vantage after insects, and then returning to their perches in the manner of Flycatchers.

60. *PACHYPHANTES SUPERCILIOSUS* (Shelley).

Hyphantornis superciliosus Shelley, Ibis, 1873, p. 140; Sharpe, Cat. B. xiii. p. 470 (1890).

Ploceus superciliosus Reichen. J. f. O. 1891, p. 388; id. J. f. O. 1897, p. 38 (Togoland).

Not by any means a common Weaver-bird, but obtained at Pong.

61. *HYPHANTURGUS BRACHYPTERUS* (Sw.).

Hyphanturgus brachypterus Shelley, B. Afr. i. p. 38.

Symplectes brachypterus Reichen. J. f. O. 1891, p. 387, et 1897, p. 36 (Togoland).

Ad. ♂ ♂, 10/6/00, Cape Coast. Ad. ♂ ♀, 3/7/00; ad. ♂ ♀, 11/8/00, Prahsu. Ad. ♀, 17/1/01; ad. ♀, 18/4/01, Gambaga. Ad. ♀, imm. ♀, Pong, 25/5/01.

Cape Coast, Prahsu, Gambaga, and Pong.

This is a common species in the wooded portions of the Colony, but not in the Hinterland. In the immature bird the upper mandible is pale brown, the lower one light horn-coloured.

62. *HYPHANTORNIS CUCULLATUS* (Müll.).

Hyphantornis cucullatus Sharpe, Cat. B. xiii. p. 451; Hartert, Nov. Zool. vi. p. 414 (1899) (Gambaga).

Ploceus cucullatus Reichen. J. f. O. 1891, p. 387; id. J. f. O. 1897, p. 37 (Togoland).

Very abundant at Cape Coast, where it suspends its nests from the higher branches of the tall cotton- and acacia-trees, which are often festooned with an enormous number of them. In the Hinterland the bird again becomes common, the big baobab-trees around the native villages forming the centres of its nesting-colonies. In May these colonies are full of activity—new nests are constructed close to those of the previous season, and the loud running chatter of the males may be heard as they court their mates at the entrance of

these nests of basketwork, from which they hang, fanning their wings the whole time to and fro like birds with their feet caught in meshwork.

In June the young males are similar in plumage to the adult females, but have the upper parts uniformly washed with olive-yellow and the under parts with bright yellow; upper mandible brownish horn-coloured, lower mandible paler; iris brown; legs and feet flesh-coloured. By the end of the year the feathers from the breast downwards become white, turning to earthy brown on the sides of the chest and flanks. The olive-yellow wash also disappears from the brown feathers of the upper parts, with the exception of the crown, which still remains olive-yellow. In the beginning of February a direct moult is undergone. The scapulars and rump are the first to assume the adult plumage, and the iris becomes red. By the end of March the bill has become entirely black; iris bright orange; feathers of the crown, sides of face, chin, and throat black; collar deep chestnut; mantle and back particoloured; remainder of the under parts white, splashed with bright orange-yellow; legs and feet light brown.

About the middle of May the complete adult plumage has been assumed.

I do not think that the adult male assumes a winter dress, since I have observed individuals throughout the year in the same plumage as that of the breeding-season.

63. CINNAMOPTERYX CASTANEOFUSCA (Less.).

Cinnamopteryx castaneofusca Sharpe, Cat. B. xiii. p. 472 (1890).

Ploceus castaneofuscus Reichen. J. f. O. 1891, p. 388, et 1897, p. 37 (Togoland).

Pong.

Breeds in May. The nests, constructed of coarse grass-blades and lined with fresh leaves, are suspended underneath the fronds of the palm-tree in damp situations. A large number may be found together. Both male and female share in the incubation.

64. CINNAMOPTERYX TRICOLOR (Hartl.).

Cinnamopteryx tricolor Sharpe, Cat. B. xiii. p. 471.

Ploceus tricolor Reichen. J. f. O. 1897, p. 37 (Togoland).

Not uncommon in the forest, and obtained at Prahsu, Fumsu, and Kwissa.

65. ORIOLOUS BRACHYRHYNCHUS SW.

Oriolus brachyrhynchus Shelley & Buckley, Ibis, 1872, p. 288 (Gold Coast); Ussher, Ibis, 1874, p. 65 (Gold Coast); Sharpe, Cat. B. iii. p. 218; Reichen. J. f. O. 1897, p. 35 (Togoland).

Oriolus larvatus Reichen. J. f. O. 1875, p. 37 (Gold Coast).

Prahsu and Fumsu.

Common in the forest, where its flute-like call is often the only bird-voice to be heard.

66. ORIOLOUS AURATUS Vieill.

Oriolus auratus Sharpe, Cat. B. iii. p. 195; Reichen. J. f. O. 1891, p. 386, et 1897, p. 34 (Togoland); Hartert, Nov. Zool. vi. p. 412 (Gambaga).

Gambaga.

This Oriole is not found in the forest-region. It is generally observed in pairs, frequenting open country, and is probably a resident in the Hinterland; the specimen obtained in January had its organs in breeding condition.

67. ORIOLOUS NIGRIPENNIS Verr.

Oriolus nigripennis Shelley & Buckley, Ibis, 1872, p. 288 (Gold Coast); Ussher, Ibis, 1874, p. 65 (Gold Coast); Sharpe, Cat. B. iii. p. 220; Reichen. J. f. O. 1897, p. 35 (Togoland).

Prahsu and Fumsu.

This Oriole inhabits the same localities as *O. brachyrhynchus*, but is not so common.

68. PHOLIDAUGES LEUCOGASTER (Gm.).

Pholidauges leucogaster Sharpe, Cat. B. xiii. p. 121;

Reichen. J. f. O. 1891, p. 386, et 1897, p. 36 (Togoland); Hartert, Nov. Zool. vi. p. 412 (Gambaga).

Gambaga, Krachi, and Pong.

A migrant in the Hinterland. Small flocks appeared at Gambaga in May. According to Capt. Giffard, the bird is again common there in August.

69. *LAMPROTORNIS CAUDATUS* (Müll.).

Lamprotornis caudatus Sharpe, Cat. B. xiii. p. 154; Hartert, Nov. Zool. vi. p. 412 (Gambaga).

An adult male from Karaga, where the species is rare. It frequents the open bush-country, nesting in holes in the big baobab-trees.

Our specimen has the back, breast, and wings oil-green, with no trace of purple-blue. It agrees well with a female specimen obtained by Capt. Giffard at Moshi. The sexes are, therefore, alike in plumage.

The similar birds with the purple-blue colour would be *L. eytoni* (Fras.). There seems to be no reason why it should not stand as a distinct species.

70. *LAMPROCOLIUS CHLOROPTERUS* (Sw.).

Lamprocolius chloropterus Sharpe, Cat. B. xiii. p. 178; Reichen. J. f. O. 1891, p. 386, et 1897, p. 36 (Togoland).

An adult male from Pong.

71. *LAMPROCOLIUS PURPUREUS* (Müll.).

Lamprocolius purpureus Sharpe, Cat. B. xiii. p. 175; Reichen. J. f. O. 1897, p. 35 (Togoland); Hartert, Nov. Zool. vi. p. 412 (Gambaga).

An adult pair from the River Volta, Gold Coast Hinterland, where the species was observed in large flocks. The female is a little larger than the male.

72. *LAMPROCOLIUS CUPREICAUDA* Hartl.

Lamprocolius cupreicauda Hartl.; Sharpe, Cat. B. xiii. p. 184 (1890).

Our specimens were from Prahsu. This species is not found outside the forest-region.

73. *ONYCHOGNATHUS HARTLAUBI* Gray.

Onychognathus hartlaubi Sharpe, Cat. B. xiii. p. 166.

Prahsu and Kwissa.

This species haunts hilly situations in the forest: it is not found in the bush-country.

74. *CORVUS SCAPULATUS* Daud.

Corvus scapulatus Shelley & Buckley, Ibis, 1872, p. 289 (Accra); Sharpe, Cat. B. iii. p. 22.

Common throughout the Hinterland, resorting in large flocks towards evening to certain roosting-places. When pairing, the male continually utters a crooning flute-like note.

75. *CRYPTORHINA AFRA* (Linn.).

Cryptorhina afra Sharpe, Cat. B. iii. p. 75; Hartert, Nov. Zool. vi. p. 412 (Gambaga).

Gambaga.

This is a common species in the open country, consorting together in small flocks, and always to be found where cattle are grazing. It nests in the tops of tall cocoa-nut trees. Its flight is straight and steady, and, when travelling together, these birds give vent to a series of short sharp cries, almost in unison.

The males have the iris claret-coloured, the females hazel.

76. *DICRURUS AFER* (Licht.).

Dicrurus afer Sharpe, Cat. B. iii. p. 247; Shelley, Ibis, 1901, p. 590.

Prahsu, Fumsu, and Kwissa.

This bird is common in the forest and enclosed country. All our specimens have the crown, back, and upper tail-coverts glossy violet-blue.

77. *DICRURUS CORACINUS* Verr.

Dicrurus coracinus Reichen. J. f. O. 1897, p. 34 (Togoland); Shelley, Ibis, 1901, p. 590.

Gambaga and Krachi.

Abundant in the open country, especially in cultivated

localities where Indian corn grows. This bird is not found in the forest and enclosed country, as is *D. afer*, and can easily be distinguished from that species when on the wing by the almost whitish brown inner webs of the primaries, which in the latter are brown, and also by the duller coloration of the upper parts.

78. *DICRURUS ATRIPENNIS* (Sw.).

Dicrurus atripennis Sharpe, Cat. B. iii. p. 232; Reichen. J. f. O. 1891, p. 386 (Togoland); Shelley, Ibis, 1901, p. 590.

Fumsu and Krachi.

In this species the crown, back, and upper tail-coverts are glossy greenish black.

79. *PRIONOPS PLUMATUS* (Shaw).

Prionops plumatus Sharpe, Cat. B. iii. p. 320 (1877); Reichen. J. f. O. 1892, p. 236, et 1897, p. 30 (Togoland); Hartert, Nov. Zool. vi. p. 418 (Gambaga).

River Volta, Gold Coast Hinterland.

This bird frequents the wooded banks of the rivers and streams, and is generally observed in small flocks of five or six.

80. *SIGMODUS CANICEPS* Bp.

Sigmodus caniceps Sharpe, Cat. B. iii. p. 323; Reichen. J. f. O. 1897, p. 301 (Togoland).

Fumsu and River Volta.

This bird frequents the forest in small parties. It is not found in the Hinterland.

In an immature specimen the white bar is on the inner webs of all the quills. The bill is black, yellowish red at the base of the lower mandible.

81. *CAMPOPHAGA PHENICEA* (Lath.).

Campophaga phœnicea Sharpe, Cat. B. iv. p. 59; Reichen. J. f. O. 1891, p. 384, et 1897, p. 30 (Togoland); Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Gambaga, Yeji, and Krachi.

82. *GRAUCALUS PECTORALIS* Jard. & Selby.

Graucalus pectoralis Sharpe, Cat. B. iv. p. 29; Reichen. J. f. O. 1892, p. 235, et 1897, p. 30 (Togoland); Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Gambaga and Krachi.

In our immature specimens several of the feathers on the head and mantle are white, barred with dark brown; the upper tail-coverts shew subterminal bands of blackish brown, and the primaries and secondaries are broadly edged with white, while there are small, arrow-shaped, dark brown spots on the shafts of a few of the breast-feathers and under tail-coverts.

83. *GRAUCALUS AZUREUS* Cass.

Graucalus azureus Sharpe, Cat. B. iv. p. 27.

Ad. ♂, 5/7/00, Prahsu. Ad. ♂, 14/9/00, Fumsu.

Prahsu and Fumsu.

Confined to the forest-region, where it is by no means common.

84. *CORVINELLA CORVINA* (Shaw).

Corvinella corvina Shelley & Buckley, Ibis, 1872, p. 288 (Gold Coast); Gadow, Cat. B. viii. p. 231; Reichen. J. f. O. 1892, p. 236, et 1897, p. 34 (Togoland); Hartert, Nov. Zool. vi. p. 418 (1899) (Gambaga).

Gambaga and Kwobia.

This bird frequents bush-country, and may be seen singly or in small parties travelling from one thick-leaved tree to another, uttering the whole time a chorus of loud chirps. Lizards form its principal food. The flight is even and very straight. Its pose, when perched, is like that of a Shrike. In immature individuals the upper parts are washed with rufous, especially noticeable on the scapulars and rump; the inner secondaries are much barred with brown and edged with pale rufous; there is a broad eye-stripe of dirty white; the feathers of the breast have brown subterminal margins; and there is a large patch of pale rufous on each side of the breast.

In the adult the general colour of the upper surface is ashy

brown, with no tinge of rufous ; scapulars ashy grey, wing coverts and secondaries clear brown ; feathers of the breast with dark brown shaft-stripes, and on each side a remarkable patch of dark cinnamon.

85. *LANIUS SMITHI* (Fraser).

Lanius smithii Shelley & Buckley, Ibis, 1872, p. 288 (Cape Coast) ; Gadow, Cat. B. viii. p. 258 (1883) ; Reichen. J. f. O. 1897, p. 33 (Togoland).

Krachi and Pong.

A common species from Krachi down to the coast, but not met with in the Hinterland. Young individuals were found at the end of May. In the immature bird the breast and crown are the first to assume adult plumage.

86. *LANIUS AURICULATUS* (Müll.).

Lanius senator Reichen. J. f. O. 1891, p. 386, et 1897, p. 33 (Togoland) ; Hartert, Nov. Zool. vi. p. 416 (Gambaga).

Lanius auriculatus Gadow, Cat. B. viii. p. 283.

Binduri, Gambaga, and Gomieri.

In a young bird the white base to all the primaries is conspicuous, the black forehead is slightly indicated ; while the crown, nape, and under parts are strongly vermiculated with brown, and the scapulars and rump are cream-coloured. This bird was killed on the 11th of March—a late date, if *L. auriculatus* is considered to be only a winter visitor to West Africa. At the same time fully adult males were obtained, the last being procured on May 4, 1901. At Gambaga, in March, a pronounced visitation of males in full plumage took place. These were, no doubt, returning northward to Europe. Still it is quite possible, though further dates are required, that a certain number remain in Africa to breed. This would account for our young bird, almost in nestling-plumage, being obtained in March.

87. *LANIUS BADIUS* Hartl.

Phoneus badius Shelley, B. Afr. i. p. 52.

Lanius badius Gadow, Cat. B. viii. p. 285 ; Hartert, Nov. Zool. vi. p. 415 (Gambaga).

In our specimen the 5th, 6th, and 7th primaries have

white bases ; the sides of the face, chest, flanks, and scapulars are washed with pale buff ; the thighs are white, barred with dark brown.

88. *LANIUS GUBERNATOR* (Hartl.).

Lanius gubernator Sharpe, Bull. B. O. C. x. p. vii (Gambaga).

Enneoctonus gubernator Shelley, B. Afr. i. p. 53.

Gambaga and Sekwi (near Salaga).

The occurrence of this Shrike, previously known only from Eastern Equatorial Africa, at Gambaga is remarkable. It is probably only a migrant to the Hinterland ; the majority of birds observed were males.

89. *NILAUS AFER* (Lath.).

Nilaus afer Shelley, B. Afr. i. p. 53 ; Reichen. J. f. O. 1892, p. 236, et 1897, p. 30 (Togoland) ; Hartert, Nov. Zool. vi. p. 418 (Gambaga).

River Volta and Gambaga.

The feathers of the crown in our adult female are brown. One example (marked "♂") has also a brown head, but it shews unmistakable signs of becoming black. The immature birds, no doubt, are similar to the adult female as regards the crown of the head.

This Shrike is not common, and is generally seen singly or in pairs. It is very active, and runs along the branches and limbs of trees after the manner of a Nuthatch.

90. *LANIARIUS MAJOR* Hartl.

Laniarius major Shelley B. Afr. i. p. 54.

Dryoscopus major Gadow, Cat. B. viii. p. 136 ; Reichen. J. f. O. 1891, p. 384, et 1897, p. 31 (Togoland).

Ad. ♂ ♀ ♀, 27/5/01, Pong.

Common in marshy situations along the lower reaches of the Volta River. The note is hoarse and guttural, like that of the bull-frog.

91. *LANIARIUS BARBARUS* (Linn.).

Laniarius barbarus Gadow, Cat. B. viii. p. 153 ; Reichen.

J. f. O. 1897, p. 31 (Togoland) ; 'Hartert, Nov. Zool. vi. p. 418 (Gambaga).

Upper White Volta.

This beautiful Bush-Shrike haunts thick undergrowth on the banks of the Volta River, being distributed in pairs from source to mouth. We never found it in any other locality, and it is essentially a river-loving species. In April it was breeding. From two of the specimens obtained we took out complete eggs. At that time the male birds were very noisy, uttering at short intervals throughout the heat of the day their loud peculiar notes, like the clang of a broken bell, which were often followed by a whirring noise made by the wings.

92. *DRYOSCOPIUS GAMBENSIS* (Licht.).

Dryoscopus gambensis Gadow, Cat. B. viii. p. 146 ; Reichen. J. f. O. 1891, p. 384, et 1897, p. 31 (Togoland) ; Hartert, Nov. Zool. vi. p. 418 (Gambaga).

Gambaga, Karaga, and Krachi.

Breeds in April. The call of this species is loud and flute-like. We observed it frequenting acacia-trees and picking off the young shoots with avidity. It is common, but found only outside the forest-region.

93. *DRYOSCOPIUS SABINII* (J. E. Gray).

Dryoscopus sabiniei Gadow, Cat. B. viii. p. 143.

Prahsu and Kwissa.

Our immature male is similar in plumage to the adult female, but it shews signs, without a direct moult, of assuming the adult male plumage: the light grey of the crown and nape is mottled with black, while several of the tail-feathers are gradually becoming black from their bases downwards.

94. *BOCAGIA MINUTA* (Hartl.).

Bocagia minuta Shelley, B. Afr. i. p. 55.

Telephonus minutus Sharpe, Ibis, 1869, p. 383 (Fantee) ; Gadow, Cat. B. viii. p. 128 ; Reichen. J. f. O. 1891, p. 385, et 1897, p. 33 (Togoland).

Krachi and Pong.

This species is not found in the Hinterland, but on the lower reaches of the Volta River from Krachi downwards. It frequents the low marshy ground, overgrown with high grass, close to the river. The birds are seldom seen during the day, but towards evening may be observed perched on branches of prominent shrubs amongst the tall grass. All our specimens are fully adult, the males having their crowns glossy jet-black, with no white superciliary streak as in female examples.

95. *TELEPHONUS SENEGALUS* (Linn.).

Telephonus senegalus Gadow, Cat. B. viii. p. 124; Reichen. J. f. O. 1891, p. 385, et 1897, p. 32 (Togoland); Hartert, Nov. Zool. vi. p. 418 (Gambaga).

Kintampo, Gambaga, and Pong.

In our immature specimens the under parts, except the throat and middle of abdomen, which are white, are ashy grey—stronger on the flanks and chest, and becoming pale ochraceous on the thighs and under tail-coverts; the crown is black, mottled with ashy brown; the superciliary streak ochraceous buff; the bill blackish brown, the lower mandible pale horn-coloured at the base.

In the adult specimens the ashy grey under parts of the immature birds become clear grey, with scarcely any trace of ashy; the crown and bill are black, the superciliary streak is white from the nostrils to the eye.

96. *MALACONOTUS SULPHUREIPECTUS* (Less.).

Malaconotus sulphureipectus Shelley, B. Afr. i. p. 56.

Laniarius sulphureipectus Gadow, Cat. B. viii. p. 159; Reichen. J. f. O. 1891, p. 385, et 1897, p. 31 (Togoland).

Cape Coast and River Volta.

The adult female is slightly larger than the male, and has the chest less strongly washed with orange; the blue-grey of the mantle extends to the back; the wing-coverts and secondaries are edged with pale yellow.

97. *MALACONOTUS POLIOCEPHALUS* (Licht.).

Malaconotus poliocephalus Shelley, B. Afr. i. p. 57; Hartert, Nov. Zool. vi. p. 418 (1899) (Gambaga).

Laniarius poliocephalus Gadow, Cat. B. viii. p. 156; Reichen. J. f. O. 1897, p. 32 (Togoland).

Gambaga.

98. *Nicator chloris*.

Nicator chloris Shelley & Buckley, Ibis, 1872, p. 288 (Abouri); Gadow, Cat. B. viii. p. 166; Reichen. J. f. O. 1891, p. 385 (Togoland).

Prahsu and Fumsu.

This species inhabits the thickest portions of the forest. Its alarm-note is a guttural "churr," rapidly repeated. The male is rather smaller than the female.

99. *Hypergerus atriceps* (Less.).

Hypergerus atriceps Sharpe, Cat. B. vii. p. 352.

Pong.

A rare species, which frequents damp places overgrown with palm and bamboo. It is a graceful and remarkable-looking bird and difficult to approach.

100. *Crateropus platycercus* (Sw.).

Crateropus platycercus Sharpe, Cat. B. vii. p. 471; Reichen. J. f. O. 1897, p. 48 (Togoland); Hartert, Nov. Zool. vi. p. 422 (Gambaga).

Gambaga, Batenga, and Salaga.

Found in small parties, frequenting rocky tree-covered localities in the open country.

101. *Crateropus stictolæmus* Alexander.

Crateropus stictilæma Alexander, Bull. B. O. C. vol. xii. p. 10 (Gambaga).

Crateropus reinwardti Reichen. J. f. O. 1897, p. 48.

Upper White Volta (Gambaga).

This species is nearly allied to *C. reinwardti*, but differs in having the cheeks dark ashy, in place of jet-black, shading gradually into the pale colouring of the throat instead of being sharply defined, while the mottling of the throat extends up to the chin.

Total length (measured in the flesh) 9·5 inches, wing 4·7, tail 5·2, tarsus 1·3. Iris light lemon-coloured; legs and feet slaty brown.

The sexes are alike in plumage. In immature birds the feathers of the wing are reddish brown, not dark brown, and lack the olive tinge.

This also applies to the young of *C. platycercus*.

In the British Museum, *C. reinwardti* and *C. stictolæmus* are represented by the following specimens:—

<i>C. reinwardti</i> .		<i>C. stictolæmus</i> .	
Adult :	Gambia (<i>Jardine</i>).	Adult :	Fantee (<i>R. B. Sharpe</i>).
"	" (<i>Jardine</i>).	"	" (<i>Ussher</i>).
"	" (<i>Rendall</i>).	"	" (<i>Ussher</i>).
"	Casamance (<i>coll. Sharpe</i>).	"	Accra (<i>Shelley</i>).
		"	" (<i>Buckley</i>).
		Adult ♀ :	Shonga (<i>W. A. Forbes</i>).
		Adult ♂ :	Gambaga (<i>Northcott</i>).

We found this new *Crateropus* on the Upper White Volta River, frequenting the thick undergrowth by the banks. In habits it resembles other members of the genus, but, unlike *C. platycercus*, is not found in the open country. Throughout the breeding-season it is met with in small parties.

102. PYCNONOTUS BARBATUS (Desf.).

Pycnonotus barbatus Sharpe, Cat. B. vi. p. 146 ; Reichen. J. f. O. 1891, p. 390, et 1897, p. 43 (Togoland) ; Hartert, Nov. Zool. vi. p. 422 (1899) (Gambaga).

Prahsu, Gambaga, and Salaga.

This is an abundant species, both in the forest-country and the Hinterland.

103. ANDROPADUS VIRENS Cass.

Andropadus virens Sharpe, Cat. B. vi. p. 109 ; Reichen. J. f. O. 1897, p. 44 (Togoland) ; Hartert, Nov. Zool. vi. p. 422 (1899) (Prahsu).

Prahsu, Fumsu, and Krachi.

Abundant in the forest, its Chat-like note being continually heard. In our immature birds the wings lack the olive-greenish tinge of the adults, and are more rufous, while the lower mandibles are brownish horn-coloured.

104. ANDROPADUS MINOR Bocage.

Andropadus minor Sharpe, Cat. B. vi. p. 400.

Prahsu and Fumsu.

This species comes very close to *A. virens*, but is characterized by being slightly smaller, while the under parts from the chest downwards are more strongly washed with yellow, especially the axillaries.

105. *BÆOPOGON INDICATOR* (J. et E. Verr.).

Bæopogon indicator Shelley, B. Afr. i. p. 62.

Xenocichla indicator Sharpe, Cat. B. vi. p. 103.

Phyllostrephus indicator Reichen. J. f. O. 1897, p. 43 (Togoland).

Prahsu and Kumasi.

106. *BÆOPOGON LEUCOPLEURUS* (Cass.).

Bæopogon leucopleurus Shelley, B. Afr. i. p. 62.

Xenocichla leucopleura Sharpe, Cat. B. vi. p. 104.

Prahsu, Fumsu, and Kumasi.

107. *CRINIGER BARBATUS* (Temm.).

Criniger barbatus Sharpe, Cat. B. vi. p. 82; Reichen. J. f. O. 1897, p. 44 (Togoland).

Fumsu and Kwissa.

This bird keeps to the thickest portions of the forest, and is more often heard than seen. The note is a sharp scolding "churr."

108. *CRINIGER FLAVICOLLIS* (Sw.).

Criniger flavicollis Shelley, B. Afr. i. p. 62.

Xenocichla flavicollis Sharpe, Cat. B. vi. p. 97.

Gambaga.

This Bulbul is rare, and is not found in the thick forest, but frequents the wooded banks of streams in the less enclosed country.

109. *CRINIGER SIMPLEX* (Hartl.).

Criniger simplex Shelley, B. Afr. i. p. 63.

Xenocichla simplex Sharpe, Cat. B. vi. p. 99.

Phyllostrephus simplex Reichen. J. f. O. 1897, p. 43 (Togoland).

Cape Coast, Prahsu, Kwissa.

This is a shy bird, keeping much to the thick bush. Its babbling notes, which are not unpleasant, are generally heard towards evening.

110. *CRINIGER GRACILIROSTRIS* (Strickl.).

Criniger gracilirostris Shelley, B. Afr. i. p. 63.

Andropadus gracilirostris Reichen. J. f. O. 1897, p. 44 (Togoland).

Chlorocichla gracilirostris Sharpe, Cat. B. vi. p. 114; Hartert, Nov. Zool. vi. p. 422 (Gold Coast).

Prahsu, Fumsu, and Kwissa.

111. *CRINIGER VERREAUXI* Sharpe.

Criniger verreauxi Sharpe, Cat. B. vi. p. 73; Shelley, B. Afr. i. p. 63; Reichen. J. f. O. 1897, p. 44 (Togoland).

Prahsu and Fumsu.

112. *CRINIGER ALBIGULARIS* Sharpe.

Xenocichla albigularis Sharpe, Cat. B. vi. p. 103.

Phyllostrephus albigularis Reichen. J. f. O. 1897, p. 56 (Togoland).

Prahsu.

The measurements of both our specimens (adult and young females) are larger than in typical *C. albigularis*. We shall, however, refer our birds to that species until further material is forthcoming. There is only one example (the type) in the British Museum. It has the following measurements:—Total length 5·8 inches, culmen 0·7, wing 2·7, tail 2·4, tarsus 0·75.

Adult ♀ (Prahsu). Total length (measured in the flesh) 7 inches, culmen 0·7, tail 3·4, tarsus 0·8. Iris hazel; upper mandible brown, lower light horn-coloured; legs and feet brown. Our immature specimen has the white throat washed with buff.

113. *PYRRHURUS SCANDENS* (Sw.).

Pyrrhurus scandens Shelley, B. Afr. i. p. 64.

Phyllostrephus scandens Reichen. J. f. O. 1897, p. 43 (Togoland).

Xenocichla scandens Sharpe, Cat. B. vi. p. 102 ; Reichen. J. f. O. 1891, p. 391 (Togoland).

River Volta.

This Bulbul is rare. We never met with it in Ashanti.

114. PYRRHURUS SERINUS (J. et E. Verr.).

Pyrrhurus serinus Shelley, B. Afr. i. p. 64.

Xenocichla serina Sharpe, Cat. B. vi. p. 100.

Kumasi.

By no means common.

115. TURDINUS GULARIS (Sharpe).

Turdinus gularis Sharpe, Cat. B. vii. p. 543.

Fumsu.

116. TURDINUS FULVESCENS (Cass.).

Turdinus fulvescens Sharpe, Cat. B. vii. p. 545.

Prahsu.

117. HYLIA PRASINA Cass.

Hylia prasina Sharpe, Cat. B. vii. p. 172 ; Reichen. J. f. O. 1891, p. 393, et 1897, p. 49 (Togoland).

Prahsu and Fumsu.

This bird is common in the clearings of the forest ; it feeds on insects, which it catches on the wing after the manner of a Flycatcher.

The male is larger than the female.

118. PHOLIDORNIS RUSHIÆ Cass.

Pholidornis rushiæ Sharpe, Cat. B. x. p. 77.

Fumsu.

The single specimen obtained was shot at the top of a high forest-tree : we never observed another.

119. EREMOMELA PUSILLA Hartl.

Eremomela pusilla Sharpe, Cat. B. vii. p. 160 ; Reichen. J. f. O. 1891, p. 394, et 1897, p. 50 (Togoland) ; Hartert, Nov. Zool. vi. p. 421 (Gambaga).

Gambaga and Sekwi.

Adult ♀. Iris grey; upper mandible brown, lower yellowish horn-coloured; legs and feet slaty brown.

Found in the open bush-country, especially where there is *Acacia*-growth.

120. EREMOMELA BADICEPS (Fraser).

Eremomela badiceps Sharpe, Cat. B. vii. p. 165.

Rare: two specimens obtained at Prahsu.

121. CAMAROPTERA BREVICAUDATA (Rüpp.).

Camaroptera brevicaudata Shelley & Buckley, Ibis, 1872, p. 287 (Aguapim); Sharpe, Cat. B. vii. p. 168.

Camaroptera tincta Reichen. J. f. O. 1897, p. 49 (Togoland).

Gambaga and Krachi.

The Krachi bird, obtained in May, is typical *C. brevicaudata*, and is identical with specimens procured at Zumbo on the Zambesi, and with Abyssinian examples in the British Museum.

Male, Dec. 28, 1900 (first winter plumage). Upper parts uniform ashy brown, becoming buffy behind the eye and ear-coverts; wing-coverts olive-yellow, brighter on the outside of the quills and secondaries; chest and flanks washed with pale buff; chin, throat, and abdomen greyish white; thighs tawny yellow; bill brownish black; legs and feet reddish flesh-coloured.

This being a transitional plumage, individual variations may be noticed. Some birds (the youngest) have their under parts washed with decided buff, while others have the ashy grey of the upper parts flecked with old ashy-brown feathers.

Regarding *C. tincta* I am unable to detect any specific distinction from *C. brevicaudata*.

This species frequents thick undergrowth by streams and rivers. It is a silent bird, its time being always fully occupied in searching after food.

122. CAMAROPTERA CONCOLOR Hartl.

Camaroptera concolor Shelley & Buckley, Ibis, 1872, p. 291 (Aguapim); Sharpe, Cat. B. vii. p. 170.

Prahsu, Fumsu, and Kwissa.

Common in the forest.

123. CAMAROPTERA SUPERCILIARIS (Fraser).

Camaroptera superciliaris Sharpe, Cat. B. vii. p. 171.

Prahsu.

124. SYVIELLA BRACHYURA Lafr.

Syviella brachyura Grant, Ibis, 1900, p. 154.

Upper White Volta and Krachi.

A rare bird in the Hinterland. We know of no previous records of it from the Gold Coast or from Togoland.

Our specimens exactly agree with Abyssinian examples in the British Museum.

125. SYLVIELLA FLAVIVENTRIS Sharpe.

Sylviella flaviventris Sharpe, Cat. B. vii. p. 157.

Prahsu and Fumsu.

The immature male is olive-brown above; the head is rufous brown; the brownish buff of the throat extends to the chest in place of olive-green; the abdomen is whitish, fading into ashy on the flanks. In the adult these parts are sulphur-yellow.

126. EMINIA CERVINIVENTRIS (Sharpe).

Eminia cerviniventris Shelley, B. Afr. i. p. 71.

Apalis cerviniventris Sharpe, Cat. B. vii. p. 139.

An adult male from Kwissa.

This specimen agrees with the example from Denkera in the British Museum in having the throat black and the sides of the chest chestnut. The Gold-Coast example in the same collection, with no black on the throat and no chestnut on the flanks, is without doubt a female.

127. APALIS NIGRICEPS. (Plate VII.)

Dryodromas nigriceps Shelley, Ibis, 1873, p. 139.

Apalis nigriceps Shelley, B. Afr. i. p. 72; Alexander, Bull. B. O. C. vol. xii. p. 12 (Prahsu).

Prahsu.

The type in the British Museum, obtained by Capt. Shelley at Abouri, Gold Coast, is an immature specimen; the head is like that of our adult female, but there is no black on the breast, and the feathers of the thighs are whitish instead of grey as in the adult.

Description of the adult female. Similar in dimensions to the male. Crown of head blackish slate-coloured, not entirely black; chin and throat white, tinged with buff; black collar on the fore-neck narrower.

This bird is probably *A. cervicalis* of Reichenow. It comes very close to the figure of that species in the 'Journal für Ornithologie' (1896, p. 40, pl. v. fig. 1).

128. ORTHOTOMUS ERYTHROPTERUS (Jard.).

Orthotomus erythropterus Sharpe, Cat. B. vii. p. 228; Reichen. J. f. O. 1891, p. 393, et 1897, p. 49 (Togoland).

Gambaga, Kwobia, Salaga, Krachi, and Accra.

The specimens killed at Gambaga in January are in their first winter plumage. The upper parts are uniform pale brick-red and the wings rufous. The example obtained at Salaga (May 14th) is changing into the fully adult plumage. At Accra, a month later, the birds were in full breeding-dress, with the upper parts vinous grey, a little darker on the head, lores, and ear-coverts, and the wings rufous.

The length of the tail varies from 2·3 to 1·8 inches in this species. The birds in winter plumage have the longest rectrices. This species is locally distributed. At Gambaga it was fairly numerous on open stretches of ground, and again at Accra. It had not previously been obtained in the Hinterland.

129. PRINIA MYSTACEA Rüpp.

Prinia mystacea Sharpe, Cat. B. vii. p. 191; Hartert, Nov. Zool. vi. p. 421 (Gambaga).

Gambaga, Prahsu, Kwissa, Kintampo, Salaga, and Yeji.

Our specimens in the first plumage have the upper parts light brown, washed with tawny, especially on the rump, while the under parts are pale yellowish buff, stronger on the flanks and under tail-coverts. The tail is long; the iris

light orange; the legs and feet flesh-coloured; the upper mandible is brown, the lower light horn-coloured.

It may be noticed that our adults were obtained both in winter and summer. All the specimens are in the dark plumage of maturity. From this it would appear that the adults have no seasonal dress.

130. *CISTICOLA CISTICOLA* (Temm.).

Cisticola cisticola Sharpe, Cat. B. vii. p. 259.

Accra.

A male obtained on June 21st is in worn breeding-plumage, the crown being almost uniform brown on account of abrasion. On the inner webs of the tail-feathers there is a distinct rufous subterminal mark.

Our other male specimen is in the striped dress, with the central tail-feathers brown, the remainder being dark brown, tipped with pale buff, and with a black subterminal bar.

During our stay on the West Coast we never met with this species anywhere except at Accra, where it is plentiful.

131. *CISTICOLA STANGERI* (Frasch).

Cisticola stangeri Sharpe, Cat. B. vii. p. 276; Reichen. J. f. O. 1897, p. 49 (Togoland); Hartert, Nov. Zool. vi. p. 421 (Gambaga).

Gambaga, Salaga, Krachi, Pong, and Accra.

The specimens obtained in January and February were in their first winter dress. In May and June this bird was breeding and in summer plumage. The female is smaller than the male.

We found this *Cisticola* common around Salaga and Accra. Towards evening it was often seen climbing the tall grasses and posing like a Reed-Warbler.

132. *CISTICOLA SUBRUFICAPILLA* (Smith).

Cisticola subruficapilla Sharpe, Cat. B. vii. p. 283.

Gambaga.

Our specimens are in winter plumage, with the crown uniform rufous. This *Cisticola* had not been previously recorded from the West Coast.

133. *CISTICOLA CINERASCENS* (Heugl.).

Cisticola cinerascens Sharpe, Cat. B. vii. p. 248; Reichen. J. f. O. 1897, p. 48 (Togoland).

Gambaga, Salaga, and Accra.

The specimens killed in May and June are in full breeding-dress. The sexes are alike in measurements.

This species is rare in the Hinterland, but fairly common near the coast.

134. *CISTICOLA ERYTHROPS* (Hartl.).

Cisticola erythrops Sharpe, Cat. B. vii. p. 250; Reichen. J. f. O. 1891, p. 393 (Togoland); Hartert, Nov. Zool. vi. p. 421 (Gambaga).

Kumasi and Yeji.

Hab. West Africa, from the Gold Coast to the Congo; also East Africa in the Zanzibar district.

135. *CISTICOLA LATERALIS* (Fraser).

Cisticola lateralis Sharpe, Cat. B. vii. p. 251; Reichen. J. f. O. 1897, p. 48 (Togoland).

Kintampo, Batenga, Salaga, and Krachi.

Adult ♂ (winter plumage), 30/11/00. General colour above uniform rufous brown; wing-coverts like the back; quills and secondaries brown, edged with dark rufous; rump dark ashy brown; upper tail-coverts like the back; tail-feathers brown, externally rufescent; tips lighter, with broad sub-terminal bar of black; lores whitish; under parts white, washed with pale tawny buff on the chest, flanks, and under tail-coverts; thighs deep tawny; axillaries and sides of wing whitish; quills below dusky, inner edges rufous; bill brownish black; lower mandible whitish horn-coloured; legs and feet reddish flesh-coloured.

Adult ♂ (summer plumage), 17/5/01. Plumage similar to that of winter, but dark dusky brown above, becoming ashy grey on sides of face and chest; under parts white; sides of body and flanks ashy brown; under tail-coverts buffish white; bill black; tip of lower mandible whitish horn-coloured.

One of the specimens obtained at Batenga in May is

changing into the summer plumage; the upper parts are much mottled, the new dark brown feathers contrasting strongly with the old rufous brown of the winter plumage.

This species is not found in the Hinterland.

136. *CISTICOLA RUFA* (Fraser).

Cisticola rufa Sharpe, Cat. B. vii. p. 252: Reichen. J. f. O. 1897, p. 49 (Togoland); Hartert, Nov. Zool. vi. p. 421 (Gambaga).

Gambaga, Batenga, and Krachi.

The winter plumage of this species differs from the summer dress in being rufous brown above, brighter on the rump and upper tail-coverts; the chest, sides of body, and flanks are washed with pale buff. The specimens killed in May are uniform dark brown above, reddish brown on the rump and upper tail-coverts. In the winter plumage the tails are longer.

The sexes are alike in measurements.

137. *MELOCICHLA MENTALIS* Fraser.

Melocichla mentalis Reichen. J. f. O. 1891, p. 393, et 1897, p. 48 (Togoland); Shelley, B. Afr. i. p. 76; Hartert, Nov. Zool. vi. p. 421 (Gambaga).

Cisticola mentalis Sharpe, Cat. B. vii. p. 241.

Daboya, Krachi, Pong, and Accra.

This species is widely distributed, inhabiting the tall elephant-grass. The flight is very straight.

It is curious that in our large series we did not obtain any females. The breeding-season is, no doubt, in May and June. In freshly-moulted birds the tails are very long.

138. *HYPOLAIS POLYGLOTTA* (Vieill.).

Hypolais polyglotta Shelley, B. Afr. i. p. 80; Reichen. J. f. O. 1897, p. 51 (Togoland).

An adult male from Kintampo.

139. *PHYLLOSCOPUS SIBILATRIX* (Bechst.).

Phylloscopus sibilatrix Seebohm, Cat. B. v. p. 54; Reichen. J. f. O. 1897, p. 51 (Togoland).

Phyllopneuste sibilatrix (Bechst.); Shelley, Ibis, 1892, p. 291 (Cape Coast).

Sekwi, Gold Coast Hinterland.

140. SYLVIA SYLVIA.

Sylvia sylvia Shelley, B. Afr. i. p. 81 ; Reichen. J. f. O. 1897, p. 50 (Togoland).
Gambaga.

141. FRASERIA OCREATA (Strickl.).

Fraseria ochreata Sharpe, Cat. B. iii. p. 303 (1877).

Ad. ♂ ♀, 12/8/00, Prahsu. Ad. ♀ ♀ ♂, 26/6/00 ; ad. ♀, 20/7/00, Prahsu. Imm. ♀, ad. ♀ ♀, 27/9/00, Fumsu. Ad. ♂, 16/10/00, Kwissa.

Common in the forest, frequenting the tops of the tall trees. In our large series none of the specimens have white tufts in front of the eye, as in the closely allied, but distinct, species *F. cinerascens*.

142. ALETHE DIADEMATA (Bp.).

Alethe diademata Sharpe, Cat. B. vii. p. 58 ; Reichen. J. f. O. 1891, p. 392 (Togoland).
A pair from Prahsu.

143. COSSYPHA VERTICALIS (Hartl.).

Cossypha verticalis Sharpe, Cat. B. vii. p. 45 ; Reichen. J. f. O. 1891, p. 394, et 1897, p. 50 (Togoland) ; Hartert, Nov. Zool. vi. p. 420 (Gambaga).

Cape Coast, Gambaga, Salaga, and Krachi.

Locally distributed and generally observed in pairs. Thickets bordering streams and rivers are its favourite resorts. A series of rapid babbling notes are uttered by the male bird ; they become persistent just after rain or towards evening. At Gambaga we obtained only one specimen—an adult male ; this differs from our other examples in being larger, while the outer tail-feather is bright orange on both webs. We shall, however, for the present, refer it to *C. verticalis*.

144. COSSYPHA GIFFARDI Hartert.

Cossypha giffardi Hartert, Nov. Zool. vi. p. 420 (Gambaga).

We obtained a single specimen of this species. It does not seem to be found at Gambaga, but to the northward along the banks of the Upper White Volta River.

145. BESSONORNIS GAMBAGÆ Hartert.

Bessonornis gambagæ Hartert, Nov. Zool. vi. p. 420 (Gambaga).

Ad. ♂, 16/12/00; ad. ♂ ♂ ♀, 17/1/01; ad. ♀, 18/2/01, Gambaga.

This new species, as compared with its near ally, *B. modestus*, has the upper parts paler and more ashy, and the chestnut on the rump not so bright. The blackish spot on the inner web of the outermost rectrix (another of its supposed characters) is not constant, since in several of our specimens the black extends across both webs as in *B. modestus*; there is, moreover, little difference in the measurements of the two species.

We found this bird at Gambaga, frequenting rocky kopjes in pairs. It was breeding in the middle of December, making its nest underneath large stones.

146. PRATINCOLA RUBETRA (Linn.).

Pratincola rubetra Sharpe, Cat. B. iv. p. 179; Reichen. J. f. O. 1897, p. 51 (Togoland); Hartert, Nov. Zool. vi. p. 421 (Gambaga).

Kintampo and Gambaga.

Common in the Hinterland from November to February.

147. RUTICILLA PHÆNICURA (Linn.).

Ruticilla phænicura Shelley, B. Afr. i. p. 85.

Gambaga, ♂, 28th December, 1900.

The occurrence of the Redstart in the Gold Coast Colony has not been noticed before.

148. TURDUS PELIOS Bp.

Turdus pelios Shelley, B. Afr. i. p. 88.

Kintampi and Lower White Volta.

The flanks of our specimens are washed with buffish-chestnut, and the bird, therefore, according to Seebohm's key, is *T. pelios*.

The measurement of wing varies from 4·8 to 4·4 inches.

149. MONTICOLA SAXATILIS (Linn.).

Monticola saxatilis Shelley, B. Afr. i. p. 89; Hartert, Nov. Zool. vi. p. 420 (Gambaga).

Gambaga.

The flight of this Rock-Thrush is very straight. When perched its actions are like those of a Wheatear.

150. *SAXICOLA ÆNANTHE* (Linn.).

Saxicola ænanthe Seebohm, Cat. B. v. p. 394; Hartert, Nov. Zool. vi. p. 420 (Gambaga).

A pair obtained at Gambaga, February 6th, 1901.

151. *PENTHOLÆA ALBIFRONS* (Rüpp.).

Pentholæa albifrons Sharpe, Cat. B. vii. p. 18; Reichen. J. f. O. 1891, p. 394 (Togoland); Hartert, Nov. Zool. vi. p. 420 (Gambaga).

Gambaga and Sang.

Nestling. Feathers edged and tipped with rusty brown.

Immature male. As in the adult female, the white frontal patch is assumed last.

Adult female. Uniform blackish brown above and below.

We found this species locally distributed in the Hinterland in open stone-strewn country, where it breeds in January, making its nest of dried grass underneath large boulders.

The male sings prettily, and when alarmed gives vent to a string of chattering notes, the last being prolonged and plaintive.

152. *MELÆNORNIS EDOLIOIDES* (Sw.).

Melænornis edolioides Sharpe, Cat. B. iii. p. 315; Reichen. J. f. O. 1892, p. 235 (Togoland); Hartert, Nov. Zool. vi. p. 418 (Gambaga).

Gambaga.

This bird is locally distributed, frequenting the thickets of fish-cane near the streams. It is shy and retiring in its nature, and was not observed anywhere except in the Hinterland.

153. *BRADYORNIS PALLIDUS* (v. Müller).

Bradyornis pallidus Sharpe, Cat. B. iii. p. 310; Shelley, B. Afr. i. p. 93.

Bradyornis modestus Reichen. J. f. O. 1897, p. 26 (Togoland); Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Gambaga, Gomieri, and Batenga.

First winter plumage. General colour above brown; rump

washed with rufous ; lesser, median, and greater wing-coverts externally edged and tipped with rufous fawn ; quills and secondaries externally edged with the same, the latter tipped with fulvous ; under surface light ashy brown, whitish on chin, throat, and abdomen ; flanks and under tail-coverts washed with rufous fawn ; tail-feathers brown, tipped with tawny buff ; under wing-coverts and inner linings to quills tawny. (♀, Kintampo, 30/11/00.)

Adult male (25/4/01, Gambaga). Upper parts uniform pale brown ; the rufous edgings to the wing-coverts and quills have almost disappeared, leaving hoary whitish margins ; lores and ring round each eye dull white ; under parts white, washed with pale ashy brown on the fore-neck, chest, and flanks ; under wing-coverts and inner edges of quills pale fawn-coloured ; under tail-coverts white ; tail-feathers brown, edged with pale brown. Total length (in flesh) 6·5 inches, wing 3·28, culmen 0·6, tail 3·2.

This species is widely distributed over the open country and is migratory in its habits.

154. *MUSCICAPA GRISOLA* Linn.

Muscicapa grisola Linn. ; Sharpe, Cat. B. iv. p. 151 ; Reichen. J. f. O. 1897, p. 26 (Togoland).

Two adult males were obtained at Kwissa on October 16th, 1900.

155. *MUSCICAPA CÆRULESCENS* Hartl.

Muscicapa cærulescens Sharpe, Cat. B. iv. p. 151 ; Reichen. J. f. O. 1897, p. 26 (Togoland).

Muscicapa cinerascens Sharpe, Cat. B. iv. p. 94.

Krachi, ♀ ad. Iris hazel ; bill horn-brown, base of lower mandible light yellowish ; legs and feet brown.

Our example agrees well with specimens from South Africa in the British Museum.

The type of the subspecies, *M. cinerascens*, is in worn plumage, as is also a typical specimen from Abouri (ad. ♀, Feb. 21, 1872, Shelley Mus.). An example of *M. cærulescens* in the British Museum from Biballa, Angola (ad. ♀, Feb. 1868, *Anchieta*), is in worn plumage, and in this

condition is identical with the Abouri specimen. Our bird, however, is in fresh plumage, although there are still a few old feathers on the upper parts which correspond to the dull plumage of the subspecies.

The general delicate blue-grey coloration of *M. cærulescens* soon disappears through age and abrasion, giving to the bird a more dull and ashy appearance, especially on the feathers of the upper parts. This may be noticed in several specimens in the British Museum from South Africa and Angola.

The fresh plumage of this Flycatcher quickly becomes stained and worn, owing to the active habit it possesses of working its way through the network of branches of thick-leaved trees in search of insects.

156. *MUSCICAPA MODESTA* Hartl.

Muscicapa modesta Sharpe, Cat. B. iv. p. 156.

Prahsu and Fumsu.

Uncommon, and only found in the forest.

157. *MUSCICAPA COLLARIS* Bechst.

Muscicapa collaris Sharpe, Cat. B. iv. p. 160; Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Two males, killed at Gambaga (Feb. 1st) and Kintampo (Nov. 11th) respectively, resemble the adult female. A third male, obtained on April 7th, is changing into the plumage of the adult male.

158. *ALSEONAX GAMBAGÆ* Alexander.

Alseonax gambagæ Alex. Bull. B. O. C. xii. p. 11.

Gambaga, ad. ♂.

This species is nearly allied to *A. murinus*, but is larger, and differs in the following characters:—General colour above light brown; under parts white, tinted with brown on the lower throat and sides of chest, where there are a few obscure brown shaft-stripes. Total length (in flesh) 4·7 inches, wing 3, tail 2·4, tarsus 0·5. Iris black; upper mandible dark brown, lower pale horn-coloured; legs and feet brown.

Hab. Gambaga, Gold Coast Hinterland.

159. *ALSEONAX COMITATA* (Cass.).

Butalis comitata Shelley & Buckley, Ibis, 1872, p. 287 (Cape Coast).

Alseonax comitata Sharpe, Cat. B. iv. p. 130.

Prahsu and Fumsu.

This species is uncommon, and is found only in the forest. The female is larger than the male.

160. *ALSEONAX FANTENSIS* Sharpe.

Alseonax fantensis Sharpe, Cat. B. iv. p. 131.

Prahsu and Fumsu.

161. *ARTOMYIAS USSHERI* Sharpe.

Artomyias ussheri Sharpe, Cat. B. iv. p. 144.

Fumsu and Kwissa.

Rare and of local distribution, frequenting the tops of tall leafless trees. From time to time these birds dart out from their high points of vantage to catch passing insects, returning again to the same places after the manner of Flycatchers. The same observation applies to the West-African species of *Alseonax*, to which genus *Artomyias* is very closely allied.

162. *CASSINIA FINSCHI* Sharpe.

Cassinia finschi Sharpe, Cat. B. iv. p. 467.

Rare. Two specimens were obtained on the Monse Hills at an altitude of 1300 feet.

163. *HYLIOTA FLAVIGASTRA* Sw.

Hyliota flavigastra Sharpe, Cat. B. iv. p. 248; Reichen. J. f. O. 1897, p. 27 (Togoland).

Gambaga.

This species was only observed by us in the Hinterland. It is decidedly uncommon, frequenting the open bush-country. The specimen obtained was in company with a number of other Flycatchers (*Batis senegalensis*).

164. *HYLIOTA NEHRKORNI* Hartl.

Hyliota nehrkorni Hartl. Ibis, 1892, p. 373, pl. viii.

Prahsu, adult ♂. Total length (measured in the flesh) 4.2 inches, culmen 0.4, wing 2.9, tarsus 0.65.

Unfortunately we obtained only one example of this rare

species, which is not represented by a single specimen in the British Museum. The type came from Accra, and was described by Hartlaub, whose description agrees fairly well with our example, although the figure is misleading. The under parts of our bird are almost uniform pale ochraceous, not deeper on the breast and fore-neck as in typical *H. nehrkorni*, while *all*, and *not only the middle* tail-feathers, are glossed with steel-blue.

These may possibly be sexual differences.

165. *SMITHORNIS RUFILATERALIS* Gray.

Smithornis rufilateralis Sharpe, Cat. B. iv. p. 389 ; Reichen. J. f. O. 1891, p. 383, et 1897, p. 29 (Togoland).

An adult male from Fumsu.

166. *MEGABIAS FLAMMULATUS* Verr.

Megabias flammulatus Sharpe, Cat. B. iv. p. 140 ; Reichen. J. f. O. 1897, p. 28 (Togoland).

Prahsu.

This bird inhabits the thick forest undergrowth. It is shy and difficult to approach, seeking safety by flying from one high tree to another, while uttering from time to time a harsh "churr, churr." It is by no means common.

167. *DIAPHOROPHYIA CASTANEA* (Fraser).

Diaphorophyia castanea Sharpe, Cat. B. iv. p. 140 ; Reichen. J. f. O. 1897, p. 29 (Togoland).

Prahsu and Fumsu.

Rare : resorts mostly to the high forest trees.

168. *PLATYSTIRA CYANEA* (Müll.).

Platystira cyanea Sharpe, Cat. B. iv. p. 145 ; Reichen. J. f. O. 1891, p. 383, et 1897, p. 29 (Togoland) ; Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Cape Coast, Prahsu, Gambaga, Salaga, and Krachi.

169. *PACHYPRORA SENEGALENSIS* (Linn.).

Pachyprora senegalensis Shelley, B. Afr. i. p. 98.

Batis senegalensis Reichen. J. f. O. 1897, p. 29 (Togoland) ; Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Kintampo, Gambaga, and Krachi.

Keeps much to low bushes in the open country.

170. *ELMINIA LONGICAUDA* (Sw.).

Elminia longicauda Sharpe, Cat. B. iv. p. 363; Reichen. J. f. O. 1897, p. 27 (Togoland); Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Gambaga and Krachi.

Locally distributed, haunting the belts of fish-canoe near the streams.

171. *TROCHOCERCUS NITENS* Cass.

Trochocercus nitens Sharpe, Cat. B. iv. p. 301; Reichen. J. f. O. 1897, p. 28 (Togoland).

Prahsu.

172. *TERPSIPHONE CRISTATA* (Gm.).

Terpsiphone viridis Reichen. J. f. O. 1897, p. 27 (Togoland); Hartert, Nov. Zool. vi. p. 419 (Gambaga).

Terpsiphone cristata Sharpe, Cat. B. iv. p. 354; Reichen. J. f. O. 1891, p. 383 (Togoland).

Gambaga and Krachi.

In our adult male the middle tail-feathers are pure white, a few of the others are still in a transitional stage, changing without a moult from red to pure white with black shafts. In our young male the tail-feathers are red, changing to white, the secondaries being broadly edged with white. In the adult female the tail-feathers are uniform red, the secondaries being edged with chestnut.

173. *TERPSIPHONE NIGRICEPS* (Temm.).

Terpsiphone nigriceps Sharpe, Cat. B. iv. p. 359; Reichen. J. f. O. 1897, p. 28 (Togoland).

Prahsu and Fumsu.

Our two female specimens, obtained at Prahsu and Fumsu, are much less bright on the upper parts than the male; the crowns are dull velvety black, with little or no gloss on the feathers; the tail-feathers are dirty reddish brown.

In the British Museum there are three specimens of this species from Ashanti, which are similar to our female examples.

In the forest-glades, where the sun can penetrate, this beautiful Flycatcher may be seen dropping silently from one bough to another and uttering now and again its pleasing and pretty song.

174. *HIRUNDO RUSTICA* Linn.

Hirundo rustica Shelley & Buckley, Ibis, 1872, p. 288 (Gold Coast); Sharpe, Cat. B. x. p. 128; Reichen. J. f. O. 1897, p. 27 (Togoland).

An adult male from Karaga, obtained May 5th, 1901.

175. *HIRUNDO NIGRITA* Gray.

Hirundo nigrata Sharpe, Cat. B. x. p. 148; Reichen. J. f. O. 1897, p. 25 (Togoland).

Prah and Volta Rivers.

Found along the rocky portions of the streams. Breeds in August.

176. *HIRUNDO PUELLA*.

Hirundo puella Sharpe, Cat. B. x. p. 154.

Sekwi, Gold Coast Hinterland.

177. *HIRUNDO DOMICELLA* Finsch et Hartl.

Hirundo domicella Sharpe, Cat. B. x. p. 165; Reichen. J. f. O. 1897, p. 25 (Togoland); Hartert, Nov. Zool. vi. p. 422 (Gambaga).

178. *HIRUNDO SENEGALENSIS* (Linn.).

Hirundo senegalensis Sharpe, Cat. B. x. p. 168; Hartert, Nov. Zool. vi. p. 422 (Gambaga).

Karaga, Kwobia, and Pong.

Common. Breeds in the holes of the baobab-trees.

179. *PSALIDOPROCNE OBSCURA* (Hartl.).

Psalidoprocne obscura Sharpe, Cat. B. x. p. 203; Hartert, Nov. Zool. vi. p. 422 (Gambaga).

Cape Coast.

Generally seen on the wing towards evening, but remaining inert throughout the heat of the day.

[To be continued.]

XX.—On the Occurrence of *Baleniceps rex* on Lake Victoria.

By Sir HARRY JOHNSTON, K.C.B., G.C.M.G., F.Z.S.

WHEN I first reached the shores of the Victoria Nyanza in the late autumn of 1899, I was informed by Mr. Hobley, then Collector for the Elgon District, who was residing on the shores of Kavirondo Bay, that the Shoe-bill or Whale-headed Stork was occasionally seen on the north-eastern shores of the Victoria Nyanza. I believe that the same information was given to me by other Europeans also. When I reached the country of Uganda proper, I questioned Mr. F. J. Jackson on the subject, but he said that he had never heard of the bird being found anywhere nearer than the Nile marshes about Lake Kioga. Just about this time we had both been told of the *Baleniceps* having been shot on the Victoria Nile near Lake Kioga by Captain Ponsonby, of the Uganda Rifles.

One Sunday in the month of March, 1900, my collector, Doggett, and my brother, Mr. Alexander Johnston, went out in the afternoon for an excursion in my large Uganda canoe. In the marshes about five miles to the west of the Entebbe Peninsula they saw a couple of Whale-headed Storks, one of which Doggett succeeded in shooting. Subsequently he returned to the same locality—the marshy coast-line of the Lake to the west of the Entebbe peninsula—and shot two more specimens. I also permitted two more of these birds to be killed by Captain Rattray and Mr. Guy Eden respectively. Captain Rattray's bird was given by him to Mr. F. J. Jackson for his collection. When these specimens had been procured I placed *Baleniceps* on the Protected List. I have subsequently heard of the bird having been seen by credible witnesses on the west coast of the Victoria Nyanza as far south as the Kagera River. A German officer also told me that it was met with on the German coast, just south of the Kagera, but he did not think that it extended its range so far as the south coast of the Victoria Lake. On the east coast it seems to be found as far south as the vicinity of Kavirondo Bay. Personally, I confess that it is a little difficult to understand why its range should not include all

the shores of the Victoria Nyanza, and why the bird should not extend its area (which at present includes Lake Albert) to the Albert Edward and the waters of the Upper Congo. I myself certainly believe that I saw a *Balæniceps* in 1882 on the swamps of the Upper Cunene River, in about 15° south latitude, at the back of Portuguese Angola. Sir H. M. Stanley was wont to assert that he had seen the bird on the extreme Upper Congo. But neither he nor I have been able to advance any further proofs in support of our belief. I was much impressed by the vast numbers of water-fowl which displayed themselves on the northern and eastern shores of Lake Albert Edward, where from a picturesque point of view the display of birds was magnificent; but I never noticed amongst the many kinds of waders anything like *Balæniceps rex*, nor could the natives inform me that it was seen there. It is undoubtedly common at the back of Busoga on the great swamps and marshy lakes which are attached to the system of the Victoria Nile. *Balæniceps* is often seen at the north end of Lake Albert, and thence north-west to within a hundred miles or so of Khartum.

Curiously enough, none of the Europeans residing in the Uganda Protectorate, missionaries or officials, had ever noticed this remarkable bird on the shores of the Victoria Nyanza before Mr. Doggett shot the first specimen; and this fact is the more singular when we remember what an ardent and all-searching collector is Mr. F. J. Jackson, C.B., who has done so much to enrich our National Collection. Nevertheless this failure to distinguish *Balæniceps* must have been due to a pure oversight, and not, as some people have argued, to the fact that the bird had only recently extended its range to the shores of the Victoria Nyanza from the Upper Nile. That this is not the explanation may be shown from the facts that the bird has a well-known name—"Būlue"—in the Luganda tongue, and that the natives of Uganda tell me that it was always known to their forefathers and was a familiar object in the marshes. The natives differ somewhat in their accounts as to its breeding-habits, but are agreed for the most part that it makes an untidy unwieldy nest on

low trees near the swamps. Some say that it builds in the branches of the gouty Ambatch trees, which do not rise to more than fifteen feet above the water's edge.

I have transmitted two specimens of *Balaniceps*, a male and a female, to the British Museum, both obtained on the shores of the Victoria Nyanza in 1890. (See Dr. Sharpe's List, above, p. 103, also Ibis, 1901, p. 156.)

XXI.—*Notices of recent Ornithological Publications.*

[Continued from p. 163.]

40. *Andersen on Birds from the Færoe Islands.*

[Sysselmand H. C. Müller's Haandskrevne Optegnelser om Færøernes Fugle. I. Uddrag ved Knud Andersen. Vidensk. Medd. Kbhvn. 1901, pp. 217-252.]

An account is given of the field-notes made by the late Sysselman H. C. Müller on birds observed in the Færoe Islands from 1863 to the time of his death in July 1897. They refer to 123 species, and are arranged in systematic order.

41. *Babson on the Birds of New Jersey, U.S.A.*

[Bulletin of the Bird Club of Princeton University. Vol. i. No. 1. September 1901.]

The first number of the Bulletin of the Bird-Club of Princeton University is appropriately devoted to a list of the birds of the vicinity, which is defined as a circular area of about eight miles radius around the town. The list contains the names of 253 species, with short remarks added to each of them. The "permanent residents" in this part of New Jersey are only 31, whereas the summer residents, which come from the south to breed, are 70. We remark that the House-Sparrow is noted as "abundant as ever," and as having lately taken to driving away the Rough-winged Swallow (*Stelgidopteryx serripennis*) by seizing on its nesting-places.

42. *Barboza du Bocage's List of his Scientific Papers.*

[Publicações Scientificas da J. V. Barboza du Bocage (1857-1901). Lisboa, 1901.]

This is a useful list of scientific memoirs and papers of Prof. J. V. Barboza du Bocage, F.M.Z.S., whose name is well known to us from the excellent work he has done on the ornithology of the Portuguese possessions in Africa. The titles of 177 publications are given (1857-1901) and explanatory notes are added.

43. *Blanford on the Distribution of Indian Animals.*

[The Distribution of Vertebrate Animals in India, Ceylon, and Burma. By W. T. Blanford, F.R.S. Phil. Trans. Royal Soc. ser. B, vol. 194, pp. 335-436 (1901).]

We have already mentioned this excellent and instructive memoir in allusion to the abstract of it published in the Royal Society's 'Proceedings' (see *Ibis*, 1901, p. 723), and have not much to add on the present occasion. The conclusions arrived at, after a careful study of the whole of the Vertebrate Fauna, are stated at the end, and are illustrated by a map in which the proposed divisions of the Indian Fauna are clearly shown.

44. *Burckhardt on the supposed Antarctic Continent.*

[Das Problem des antarktischen Schöpfungscentrums vom Standpunkt der Ornithologie. Von Prof. Rud. Burckhardt. Zool. Jahrb. (Syst.) xv. Heft 67.]

Prof. Burckhardt discusses at some length the question of the former existence of an Antarctic Continent from an ornithological point of view, and comes to the conclusion that the evidence on this subject, supposed to be provided by the Ratitæ and their distribution, gives no support to the theory.

45. *Chapman on new Peruvian Birds.*

[Descriptions of Six apparently New Birds from Peru. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist. xiv. pp. 225-228.]

Mr. Chapman describes the following new species and subspecies represented in a collection of about one hundred

specimens received from Mr. H. H. Keays, by whom it was made at Inca Mine, in S.E. Peru (lat. $13^{\circ} 31'$ S., long. 70° W., alt. 6000 feet): *Chlorochrysa fulgentissima*, *Malacothraupis castaneiceps*, *Euphonia xanthogastra brunneifrons*, *Chlorospingus flavigularis parvirostris*, *Ochthæa keaysi*, and *Terenura xanthonota*. The *Chlorochrysa* is apparently the same as that described and figured in this Journal (Ibis, 1901, p. 716, pl. xv.) by Graf. v. Berlepsch and M. Stolzmann as *C. hedwige*; and if so, Mr. Chapman's name (August 1901) will have priority.

46. Clark on the Affinities of the Humming-birds.

[Are Humming-birds Cypseloid or Caprimulgoid? By Hubert Lyman Clark. Science, New Ser. xv. p. 108 (1902).]

After quoting Prof. D'Arcy Thompson's concluding paragraph in his paper on the pterylosis of *Patagona gigas* (P. Z. S. 1901, p. 311) and Dr. Shufeldt's 'Studies of the Macrochires' (which take exactly opposite views as to the relationship of the Trochilidæ), Mr. Clark, who has just completed a careful examination of certain members of this family and of the Cypselidæ and Caprimulgidæ, pronounces as follows:—

"I am led to disagree with Professor Thompson that the Humming-birds are nearer to the Goatsuckers than to the Swifts, and I must dissent quite as strongly from Dr. Shufeldt's opinion that the pteryloses of Swifts and Humming-birds are 'essentially different.' To my mind the Swifts and Humming-birds are pterylographically nearer each other than are Grouse and Guans, and almost as nearly allied as Grouse and Quail. I cannot see that the *Caprimulgi* have any close relationship to either."

47. Dubois's 'Synopsis Avium' (fasc. v.–viii.).

[Synopsis Avium. Nouveau Manuel d'Ornithologie, par Alphonse Dubois. Fasc. V.–VIII. Royal 8vo. Bruxelles, 1900–01.]

In these four "fascicules" of the 'Synopsis Avium' (see Ibis, 1901, p. 326) the enumeration of the Oscinine Passeres

is continued from No. 4015 to No. 7980 (Muscicapidæ-Fringillidæ). We think that it would have been better to have called the "subspecies" by that name and not "varieties"—a term which should be reserved for abnormal variations (albinos, melanisms, &c.). The following species are figured:—*Geositta rufipennis*, *G. isabellina*, *Lipaugus holerythrus*, *Attila citreopygius*, *Cyanolyca yucatanica*, *Xanthura cyanodorsalis*, and *X. cæruleocephala*.

48. 'The Emu.'

[The Emu, a Quarterly Magazine to popularise the Study and Protection of Native Birds. Official Organ of the Australasian Ornithologists' Union. Editors A. J. Campbell and H. Kendall. Vol. i. pts. 1-2, pp. 1-80, pls. i.-vi.]

We have more than ordinary pleasure in giving a notice of the first two numbers of our "newly-hatched" contemporary, 'The Emu,' the official organ of the Australasian Ornithologists' Union, while we feel a natural pride in observing that 'The Ibis' has at least suggested the title of the Journal, and our constitution, perhaps, to some extent that of the Society which issues it.

A serial has long been needed to collect within its pages the scattered papers on Australasian Ornithology; and we notice that it is intended to include articles on the Protection of Birds, a very necessary matter in Australia of the present day. The membership of the Union is by no means confined to Australia, for we see that Prof. Newton and Mr. J. J. Dalglish are on the list of the founders.

That we owe a heavy debt of gratitude to Federated Australia no one at the present juncture will deny, and we may well hasten in return to shew our readiness to assist in any of her new-born enterprises as far as we are able, though it be by so small a contribution as a congratulatory and appreciative notice of her first united ornithological effort. 'The Emu' itself, we are sure, will prove an undertaking of no small importance, and that it may advance and prosper, even until it rivals our own publication, is our heartfelt desire.

The Union starts its career under the Patronage of the

Prince and Princess of Wales and under the Presidency of Col. W. V. Legge, while the names of the other office-bearers form a guarantee of future excellence. The Editors (Messrs. A. J. Campbell and H. Kendall) have provided papers of a popular, as well as of a scientific, nature—wisely endeavouring to attract thereby all sorts and conditions of the widely-scattered bird-lovers of the Continent; while coloured plates are promised in the future, if funds permit, to replace or augment the reproductions of photographs temporarily utilized.

The first number contains an account of the meetings which led to the formation of the Union, with a photographic reproduction of the signatures of the ornithologists present on Nov. 7th, 1900; the second a report of the Inaugural Session of Oct. 31st, 1901, with the President's address; while both comprise articles by well-known Australian ornithologists, and conclude with memoranda under various permanent headings, such as "Forgotten Feathers," "Stray Feathers," "From Magazines," "Reviews," and "About Members."

49. *Finn's 'Birds of Calcutta.'*

[The Birds of Calcutta. By F. Finn. Sm. 8vo. Calcutta, 1901. Pp. 1-89. Price 2s. net.]

This little book, which is pleasantly written in a popular and slightly jocose style, contains articles originally printed in 'The Asian' on twenty-four kinds of birds. The titles being given in English, the author has managed to include under each heading various species which, among Anglo-Indians at Calcutta, go by the same appellation, while he generally gives the native names also. The habits of the birds are by no means neglected, and stories in connexion with them brighten the pages. The plumage, nests, and eggs are described with sufficient exactitude, and the pamphlet will doubtless be of great use to residents or visitors who are tyros in the science of ornithology.

50. *Finsch's Lists of the Birds of the Leyden Museum.*

[Zur Catalogisirung der ornithologischen Abtheilung von Dr. O. Finsch. VI.-IX. Notes Leyden Mus. xxiii. pp. 1, 33, 58, 97.]

Dr. Finsch proceeds with his catalogue of the birds in the Leyden Museum (see *Ibis*, 1891, p. 725) and his remarks thereupon, and now treats of the Meropidæ, Muscicapidæ, Certhiidæ, and Cuculi. A new species, *Cyornis hosii*, is described from Borneo, and a complete revision of this difficult genus is given. The supposed *Cuculus canoroides* of the Malay Archipelago is re-united to the European *C. canorus*. Various other notes and comments on the birds of these groups are given.

51. *Häcker on the Song of Birds.*

[Der Gesang der Vögel, seine anatomischen und biologischen Grundlagen. Von Dr. Valentin Häcker. 8vo. Jena, 1900. Pp. 6, 102. G. Fischer. Price 3s. 6d.]

This interesting little volume, abundantly and clearly illustrated, gives in the first place an account of the anatomy of the bird's syrinx. There is naturally not a great deal of novelty in this part, excepting, indeed, that the syringes are often exhibited in longitudinal section, thus emphasizing the different thickness of the tracheal and bronchial rings which constitute the organ. The latter part of the volume deals exclusively with the phenomena of song in birds.

52. *Hall on the Species of Gymnorhina.*

[A Revision of the Genus *Gymnorhina*. By Robert Hall. Proc. Roy. Soc. Victoria, xiv. pp. 1-9.]

Mr. Hall shews that many intermediate forms exist between the white-backed *G. leuconota* and the black-backed *G. tibicen*, upon some of which the supposed species *G. hyperleuca* and *G. dorsalis* have been founded. He proposes to reduce them all to one species, and to call it *G. leuconota*. But if this is done the name "*tibicen*" of Latham has the priority and should be employed. As a general rule, however, the white-backed and the black-backed birds are readily distinguishable.

53. *Hartert on an overlooked Swift.*

[On an overlooked Indian Swift. By Ernst Hartert. *Ornis*, xi. p. 199.]

The resuscitated Swift is *Cypselus acuticauda* of Jerdon (*B. Ind.*, Suppl. p. 870, 1864), which in the *B. M. Catalogue* (xvi. p. 444) has been united to *Micropus apus pekinensis*. Mr. Hartert has now found a second specimen in the Tring Museum (from Cherripungi, Khasia Hills), which he has compared with the type in the Liverpool Museum (from Nepal) and found to be identical with it. He calls it *Apus acuticauda*, and describes its characters. We prefer to call it by Blyth's name *Cypselus acuticauda*.

54. *Hartert and Hellmayr on two new Thrushes.*

[On two new Thrushes from Western Colombia. By Ernst Hartert and Carl E. Hellmayr. *Nov. Zool.* viii. pp. 492, 493.]

Turdus ignobilis goodfellowi, from the Cauca valley of Colombia, and *T. colombianus* (a southern representative of *T. obsoletus*, but nearly allied to *T. nigrirostris*), from Cali, Western Colombia, are described as new.

55. *Helm on some Birds of Heligoland.*

[Ueber einige ornithologische Beobachtungen auf Helgoland. Von F. Helm. *Ornithol. Monatsb.* ix. pp. 149-151.]

This paper treats of the Starling, Linnet, Swift, Hooded Crow and Wild Duck, as noticed on Heligoland.

56. *Helm on the Flight of Birds.*

[Betrachtungen über die Beweise Gätke's für die Höhe und Schnelligkeit des Wanderfluges der Vögel. Von F. Helm. *J. f. O.* 1900, pp. 435-452.

Weitere Betrachtungen über die Beweise Gätke's für die Höhe und Schnelligkeit des Wanderfluges der Vögel. Von F. Helm. *J. f. O.* 1901, pp. 289-303.]

Herr Helm considers that, although we may agree with many of Gätke's statements regarding the flight of Birds, certain of his conclusions are most surprising, and are founded on premisses which may be shown to be false. Especially

is this true of the velocity of the movements of the flocks on migration, which Gätke calculates in the case of the Red-spotted Bluethroat at some 45 geographical miles per hour. This estimate is founded on the belief that the bird quits Egypt at the end of April or beginning of May, while it arrives in Heligoland at about the same time of year; so that some 400 miles would be covered in one spring night of perhaps 9 hours duration. Moreover, Gätke appears to have believed that the flocks never, or hardly ever, rested by the way. Now Herr Helm is at great trouble to shew that the Blue-throat leaves Egypt in February or March, and proves by many a record that it occurs in spring much more frequently than has been hitherto believed in the intermediate districts of Austria and Germany. It therefore has one or two months in which to compass the journey.

Again, as to the height at which the flocks travel, he considers that former calculations may have been erroneous, for he thinks that the state of the atmosphere has not been sufficiently reckoned for, and that it may produce delusive effects both upon the eye and the ear of the observer. Sound travels very differently through different media, and the distance of a bird may be extremely difficult to judge correctly. The second article brings under consideration the flight of Swallows, Carrier-Pigeons, and Ducks, with a discussion of the effects of temperature.

57. *Hudson's 'Birds and Man.'*

[Birds and Man. By W. H. Hudson, F.Z.S. London. 8vo. Longmans. 318 pp. 1901. Price 6s. net.]

This new volume of our friend Mr. W. H. Hudson's essays on topics connected with bird-life will be of interest to ornithologists as well as to the world in general. They relate to such popular subjects as Daws, Ravens, and Willow-Warblers, and to such familiar places as London, Wells, and Selborne, but will be none the less appreciated by many of us. The Dartford Warbler has deservedly a chapter to itself: Mr. Hudson found it still existing in four counties "in a few widely-separated localities," but in spite of the "protection-

orders" of the County Councils it will probably be soon extinct.

58. *Hutton on Migratory Birds in New Zealand.*

[Our Migratory Birds. By Capt. F. W. Hutton, F.R.S. Trans. New Zeal. Inst. 1900, p. 251.]

This is an interesting paper which we commend to the notice of all who wish to study the difficult problems of Migration. The only *regular* summer visitors to New Zealand, for the purpose of breeding there, are the two parasitic Cuckoos *Eudynamis taitensis* and *Chrysococcyx lucidus*. But numerous Waders and other birds appear there more or less sporadically, besides a number of accidental visitors from Australia and other adjacent lands.

59. *Madarász on a new Palæarctic Bird.*

[Ueber einen neuen palæarktischen Vogel: *Acanthopneuste puella*, n. sp. Von Dr. Julius v. Madarász. Természet. Füzet. xxv.]

Acanthopneuste puella is based on several specimens received by the National Hungarian Museum from the vicinity of Vladivostock, Eastern Siberia. It is nearly allied to *Phylloscopus coronatus* of Japan (Cat. B. v. p. 48), but has no light middle stripe on the head, and shews other points of difference.

60. *Mitchell on the Classification of Birds.*

[On the Intestinal Tract of Birds; with Remarks on the Valuation and Nomenclature of Zoological Characters. By P. Chalmers Mitchell, D.Sc. Oxon., F.L.S., F.Z.S. Trans. Linn. Soc. Lond. ser. 2 (Zool.), vol. viii. pt. 7, pp. 173-275; 3 plates.]

Before the appearance of the present paper Dr. Mitchell had, in a communication to the Zoological Society of London, directed attention to the importance of the intestinal tract as a basis of bird-classification.

The very large series of differences in the size of the various loops and folds of this tract lend themselves to a regular arrangement of birds in correspondence therewith, and, what is more important, permit of a reasonable guess at the more

archaic forms, and thus allow of the tracing of the various modifications. Such types as the Gallinaceous birds and *Chauna* lie at the base of the series with numerous regular folds quite like those of a crocodile. Thence the changes that have taken place can be followed out in several directions, and with great ease to the reader on account of the useful diagrammatic lines of ascent figured on the author's plates. It must be gratifying to him, as it is reassuring to us, to find that the scheme recommended does not do violence to old-established views of classification. Thus the Petrels are placed near to the Storks and Herons as W. A. Forbes urged they should be; and the Gulls are put near the Charadriiform birds. It is largely the absence of all sensational reshuffling of the groups which leads us to believe that Dr. Mitchell has tapped a new source of information, which will serve, perhaps even better than anything that has gone before, to help us to the proper arrangement of birds.

61. *Nelson on new Mexican Birds.*

[Descriptions of a new Genus and eleven new Species and Subspecies of Birds from Mexico. By E. W. Nelson. Proc. Biol. Soc. Washington, xiv. pp. 169-175.]

Mr. Nelson describes as "new species" *Crax chapmani* from Yucatan, *Attila mexicanus* from Tabasco, *Myiopagis yucatanensis* from Yucatan, *Stelgidopteryx ridgwayi* from Yucatan and Mexico, and *Troglodytes peninsularis* from Yucatan, besides several subspecies. A new genus "*Nyctiagrius*" is made for *Caprimulgus yucatanicus* Hartert (Cat. B. xvi. p. 575).

62. *Osgood on the Birds of the Queen Charlotte Islands.*

[Natural History of the Queen Charlotte Islands. By Wilfred H. Osgood. N. American Fauna, No. 21, pp. 7-50, pls. i.-v. Washington, 1901.]

After an introductory account of the islands, which lie off the coast of British Columbia, and details of their physiography, Mr. Osgood proceeds to tabulate the species of Vertebrates which are found there, furnishing in conclusion notes on those of most importance and a bibliography of the

works consulted. He found birds abundant, but of the ninety-six species observed the majority were much the same as in the Sitkan district. Two new forms are described as peculiar to the group—*Cyanocitta stelleri carlottæ* and *Dryobates picoideus*; while a third, *Nyctala acadica scotæa*, is also found on the mainland.

63. Osgood on the Birds of Cook Inlet, Alaska.

[Natural History of the Cook Inlet Region, Alaska. By Wilfred H. Osgood. North American Fauna, No. 21, pp. 51–81, pls. vi., vii. Washington, 1901.]

After leaving the Queen Charlotte Islands, Mr. Osgood and his assistant made a “biological reconnaissance” into the district of Cook Inlet, just south of the great Alaskan promontory. It was too late (August and September) for the summer migrants, and the birds met with were permanent residents or “fall stragglers.” Land-birds were not numerous either as species or individuals. The list enumerates 77 species, all known Alaskan forms.

64. Pycraft on the Neognathine Palate.

[Some Points in the Morphology of the Palate of the *Neognathæ*. By W. P. Pycraft, A.L.S., F.Z.S. Journ. Linn. Soc. Lond. (Zool.) xxviii. pp. 343–357, pls. 31, 32.]

Mr. Pycraft here discusses the peculiarities and changes of the palate in the *Neognathæ*, compared with those in the *Palæognathæ*, the former group consisting of the “Carinate” birds, with the exception of the Tinamous, and the latter of the Tinamous and the “Ratite” birds. He prefers the palate to the sternum as a guide to classification. The differences he considers to be those of degree, and not of kind, while the *Palæognathine* type is undoubtedly the oldest, and *Dromæus* the most typical genus in this respect. *Dromæus* is therefore taken as the standard, and is compared as regards the palate with *Rhea* and the Tinamous (which are much alike); a glance is then taken at the “Carinate” birds, of which many examples are considered. Summing up, the vomer and pterygoid are stated to be uninterruptedly

connected with one another throughout life in the *Palæognathæ*, while the palatines remain perfectly separated from one another "caudad," and are connected only with the maxillo-palatine processes "distad"; in the *Neognathæ* the relations of these bones are of the opposite character, and the palate is undoubtedly undergoing a further change. The most primitive form of Avian palate is the *Dromæognathous*, and not the *Schizognathous*.

65. *Reiser and Knotek on Bird-migration in Bosnia and Herzegovina.*

[Ergebnisse der ornithologischen Zugsbeobachtungen in Bosnien und der Herzegovina. Verfasst von Custos Othmar Reiser und Prof. Johann Knotek. Wissensch. Mitth. aus Bosnien u. Herzegovina, Bd. viii.]

This is the report of the Committee for the observation of bird-migration in Bosnia and Herzegovina for the years 1897-1900, commencing with the autumnal migration of 1897, and ending with the vernal migration of 1900. After lists of the various stations and observers, the notes of the latter are given, arranged in systematic order. Then follows a *résumé* of the details arranged in the order of the calendar, so that we can see what species passed on each particular day. In the autumnal migration of 1899, 51 species are recorded; in the vernal migration of 1900, 62.

66. *Robinson and Richmond on Venezuelan Birds.*

[An annotated List of Birds collected in the Vicinity of La Guaira, Venezuela. By Wirt Robinson and Charles W. Richmond. Proc. U.S. Nat. Mus. xxiv. pp. 163-178.]

This is an account of two collections made in 1895 and 1900 in the vicinity of La Guaira, the seaport of Caraccas, by Capt. Robinson, together with a few specimens obtained by Mr. Lyon, who accompanied Capt. Robinson on his second trip. Eighty-one species are enumerated as represented in the series, amongst which a Wren (*Microcerculus pectoralis*) is described as new. Most of the others are well known. This is a poor result, but the avifauna of the coast-district of La Guaira is evidently very meagre. The

collectors should have gone high up into the mountains above, where they would have entered the range of some scarce and little-known species. A few field-notes are added by Capt. Robinson.

67. *Rothschild and Hartert on Birds from Guadalcanar.*

[List of a Collection of Birds from Guadalcanar Island, in the Solomon Group. By Hon. Walter Rothschild, Ph.D., and Ernst Hartert. Nov. Zool. viii. pp. 373-382.]

A collection made by Mr. Albert S. Meek on Guadalcanar, Solomon Group, in April and May, 1901, is described, and 57 species are enumerated. Many useful notes are given, and *Ceyx lepida collectoris* is described as a new subspecies. The group of *Baza subcristata* is worked out, and five subspecies are recognised.

68. *Sarasin Brothers on the Geological History of Celebes.*

[Ueber die geologische Geschichte der Insel Celebes auf Grund der Thierverbreitung. Von Dr. Paul Sarasin und Dr. Fritz Sarasin. 1 vol. 4to. Wiesbaden, 1901. 170 pp.; 19 pls.]

This learned and well-executed memoir is an attempt to explain the complexities of the existing fauna of Celebes by a careful study of its land-animals, to our knowledge of which the authors have largely contributed. The Land and Fresh-water Mollusks, the Reptiles and Amphibians, the Birds, the Mammals, and the Land-Planarians are all thoroughly discussed, and their distribution illustrated by a series of elaborate maps. Four "land-bridges" are shown to be necessary to account for the complications of the Celebean fauna, and are supposed to have formerly connected this strange island with Java, the Philippines, the Moluccas, and Flores. No one interested in distribution should omit to study this valuable piece of work.

69. *Schalow on Birds from Central Asia.*

[Beiträge zur Vogelfauna Centralasiens. Uebersicht der von Herrn Oberamtmann Dr. Holderer während einer Durchquerung Asiens gesammelten Vögel. Von Herman Schalow. J. f. O. 1901, pp. 393-456, Taf. iii., iv.]

In the year 1887, Dr. Holderer of Heidelberg and Dr. Fütterer of Karlsruhe made a journey across Central Asia from the Caspian to China, and of this journey Herr Schalow now gives us the ornithological results. The travellers made but a short stay at Bokhara, Samarkand, and Tashkent, and devoted their main energies to Chinese Tibet, their chief collecting-stations ranging from the Altai, Pamir, and Kashgar districts to the Gobi Desert, the Nan-schan Range, the Sining-ho Valley, Koko-nor, the Upper Hoang-ho, and the Tsin-ling Mountains. After an account of the literature referring to these regions, we are given a list of species, which contains few biological notes, but is augmented by remarks on the contents of the birds' stomachs. Pheasants were one of the main features of the avifauna, *Phasianus holdereri*, from Min-tschou, being described as new. *Podoces biddulphi* was obtained at Ak-su in the isolated oasis near Thian-schan, and *P. hendersoni* elsewhere, but not *P. humilis*. Three examples of the rare *Archibuteo hemiptilopus* Blyth (= *A. strophiatatus* Hodgs.) were procured at Koko-nor, and a new species, *A. holdereri*, at the same place, while a subspecies, *Ruticilla rufiventris pleskii*, from Nan-schan, is recognised as distinct.

70. Scott on the Song of Birds.

[Data on Song in Birds—the Acquisition of new Songs. By William E. D. Scott. Science, xv. p. 178 (1902).]

Our attention is here called to some amusing facts respecting the song of birds and their powers of inventing new songs, of which the writer gives some remarkable examples. That a Rose-breasted Grosbeak (*Zamelodia ludoviciana*) should be capable of talking quite plainly is surprising to us, as are others of Mr. Scott's stories. No one interested in bird-song should omit to read this paper.

71. Shufeldt on the Osteology of the Pigeons.

[On the Osteology of the Pigeons (*Columbæ*). By R. W. Shufeldt. Journ. of Morphol. xvii. pp. 487–514, pls. A & B, 4 cuts.]

In this paper, treating only of the Pigeons of the United

States, Dr. Shufeldt gives us a considerable amount of information on various points, and shews that the morphology of the group is particularly homogeneous. He selects *Ectopistes* as "a very good average Columbine type," and gives full details of its osteology, in comparison with those of *Zenaidura*, *Zenaida*, *Engyptila*, *Melopelia*, *Columbigallina*, *Scardafella*, *Geotrygon*, and *Starnænas*, the last-named differing somewhat from the others in its trunk-skeleton. *Didunculus* is treated separately and is figured, while for the genus *Columba* the author has been obliged to rely upon the work of his predecessors. The affinities of the group are shown to be with the Gallinaceous birds.

72. Studer and Fatio on the Birds of Switzerland.

[Katalog der Schweizerischen Vögel bearbeitet im Auftrag des eidgen. Departements des Innern (Abteilung Forstwesen) von Dr. Th. Studer und Dr. V. Fatio. Lief. III.* Pp. 193-418; 2 maps. 8vo. Bern, 1901.]

Many observers have assisted the authors in the production of this carefully compiled Catalogue, of which the present part contains the *Insessores*, *Coraces*, *Scansores*, and a portion of the *Captores*, to use the names that evidently reflect the preferences of the learned writers. Perhaps the most interesting species included are *Merops apiaster*, *Coracias garrula*, *Pastor roseus*, and *Oriolus galbula*, for which maps of distribution are given; with *Picoides tridactylus* and *Bombycilla garrula*, for which none are thought necessary. The birds are considered from all points of view—as residents, migrants, and so forth; references to the literature are given in profusion for the several regions; and other information is added; the whole forming a standard work on Swiss Ornithology.

73. Verrill on the "Cahow" of the Bermudas.

[The Cahow of the Bermudas, an Extinct Bird. Ann. & Mag. Nat. Hist. (7) ix. p. 26.]

The "Cahow," or "Cohowe," was a bird described by the earliest settlers in the Bermudas as good for food, very

* For notices of Parts 1 and 2 see 'Ibis,' 1889, p. 394; 1899, p. 394.

abundant, and easily captured—so easily, in fact, that it quickly became extinct. After quoting many extracts from old authorities on the subject, Mr. Verrill comes to the conclusion that the “Cahow” was a “web-footed sea-bird,” not a Shearwater nor a Petrel of any kind, but possibly an Auk. It was strictly nocturnal in its habits. It came to the Bermudas in October to breed, and remained until June. It laid its single large white egg in burrows. It was about the size of a Pigeon, brown above and white beneath, and had a strong hooked bill. Now, what was the “Cahow”?

XXII.—Letters, Extracts, Notices, &c.

WE have received the following letters, addressed “to the Editors” :—

SIRS,—In volume iv. of the “Birds” (Fauna of British India, p. 278) Dr. Blanford states that he considers it almost certain that Jerdon and Blyth mistook the “Knots” which they obtained at Madras and in Calcutta for *Tringa canutus*, whereas they were really *T. crassirostris*. I therefore beg leave to draw the attention of your readers to the fact that I have to-day (January 16th) obtained in our Bazaar an undoubted Knot alive, the first that I have seen here. I may also add that the specimens 1592 A & B of Blyth’s ‘Catalogue’ are still in existence, and are *T. canutus*, as he said. It is evident, therefore, that this species visits the Indian Empire as well as *T. crassirostris*, though it is, of course, an irregular visitor, like so many others of our wild-fowl.

For instance, Baer’s Pochard (*Fuligula baeri*), which I have known to be occasionally common, has been scarce here for some years now; while, on the other hand, the Bronze-cap Teal (*Eunetta falcata*), formerly very scarce, has been arriving regularly for the last few years. This winter I have already obtained four specimens of the last-named Duck, although the season is an excessively bad one for water-fowl of all kinds. I have recorded many previous occurrences of

this species in our bazaar in my recent popular pamphlet 'How to know the Indian Ducks.'

Yours &c.,

Indian Museum, Calcutta.
1st March, 1902.

FRANK FINN.

SIRS,—In the article in last year's 'Ibis' on the "Birds of the Yenesei River," the two varieties of the Yellow Bunting figured on plate x. are referred to as *Emberiza citrinella molessoni* and *E. citrinella brehmi* of Homeyer. I have searched everywhere for Homeyer's description of *E. citrinella* var. *brehmi*, but cannot find it. Moreover, when in Brunswick in August last I examined all the Buntings in the Homeyer collection and the catalogues, and could find no reference to this name, so that I can only conclude that it has never been published. It appears, however, that Dr. C. L. Brehm was the first to recognise this form, as in his 'Vollständige Vogelfang,' p. 414 (1855), he describes it as follows:—" *Emberiza erythrogenys*, Brm. (*Ember. citrinella* auct.). Unseren grössten Goldammer ähnlich, aber etwas weniger schön mit weisslichen Flügelbinden, rostrothem Kinne und solchen Bachen- und Augenstreifen bei in Männchen bei Sarepta." This form, therefore, if recognised as a subspecies, should stand as *Emberiza erythrogenys*, Brehm, and Mr. Zarudny's name *E. molessoni* must sink into a synonym.

Yours &c.,

28 Queensborough Terrace,
London, W.
6th March, 1902.

H. E. DRESSER.

News of Mr. Thomas Ayres.—Many of the readers of 'The Ibis' will be pleased to hear that the veteran ornithologist of the Transvaal, Mr. Thomas Ayres, of Potchefstroom, who was a frequent contributor to our pages from 1860 to 1886, has escaped the dangers of the Boer War and is still safe in his home in the Transvaal Colony. Writing to Mr. W. L. Selater on Dec. 4th, 1901, he says that, as it may be well supposed, he has been able to do very

little collecting during the past two years, no shooting having been permitted. But quite recently he has obtained leave to carry his gun along the river in the immediate vicinity of Potchefstroom, and has obtained a small number of specimens for the South African Museum. Mr. Ayres remarks that he does not quite believe in the so-called Russ's Weaver-bird (*Quelea russi*) being distinct from *Q. sanguinirostris*. In the Potchefstroom district the *Quelea* nests freely amongst the reeds, in company with *Pyromelæna oryx* and *Hyphantornis velatus*, and lays blue eggs, which are similar to those of the *Pyromelæna* and very difficult to identify. Mr. Ayres believes that *Quelea* is parasitic, and "often, if not always," lays its eggs in the nests of the Red Bishop-bird (*Pyromelæna*).

The British Dipper.—Amongst recent "Promotions" we have to record that of the "British Dipper," which has been elevated to the rank of a subspecies by Ritter v. Tschusi zu Schmidhoffen, as *Cinclus cinclus britannicus* (cf. Ornith. Jahrb. xiii. p. 69, 1892). The author of this feat states that the British form of *Cinclus* has nothing to do with the Mid-European *C. aquaticus*, but is more nearly allied to the Scandinavian *C. cinclus* (i. e. *C. melanogaster*, Br.). With the kind assistance of our foreign friends we are really beginning to know something about our native birds!

British Ornithologists abroad.—Captain BOYD ALEXANDER has returned to his duties in West Africa and has arrived safely at Cape Coast Castle. Before leaving England, as will be seen by our columns, he wrote for us an excellent account of the birds which he had observed and collected in the Gold Coast Colony during his service with the Ashanti Expedition, and he will no doubt be equally active on the present occasion.

Mr. HENRY F. WITHERBY left England on February 20th, on a new ornithological expedition. This time he proposes to go to Western Persia, and to work the country between Bushire and Shiraz. He hopes to be able to penetrate into the mountainous district north-west of the latter town.

Mr. Witherby takes with him Mr. C. F. Camburn, an experienced professional taxidermist, who accompanied him up the White Nile in 1900, and will, no doubt, obtain excellent results, although we fear that Persia, however diligently it may be searched, is not capable of producing many absolute novelties in bird-life.

Mr. ALEXANDER WHYTE, after a rest in England, has returned to British East Africa, *viâ* Mombasa, but will be engaged principally in botanical collecting. He is, however, always ready to attend to the special requirements of his old correspondents.

Mr. SCOTT B. WILSON started on January 16th last for Tahiti, *viâ* New Zealand, with the intention of making a complete exploration of the Tahiti group and possibly going on to Samoa. On his passage down the Channel, however, we regret to learn, Mr. Wilson had the misfortune to break his leg, and was in consequence obliged to land at Plymouth. On his recovery he has determined to make a fresh start, but some months' rest are still absolutely necessary.

Capt. G. E. BARRETT-HAMILTON, F.Z.S., is "at the front" with the 5th Royal Irish Rifles, and is believed to be at present engaged in "guarding the lines of communication" near Vredefort Road, in the Orange Colony. But he is by no means neglectful of Natural History, and has lately sent several small contributions to the Zoological Society.

The last news we received from Mr. A. BLAYNEY PERCEVAL were dated from Takunga, British East Africa, where he holds a post in the Government Service. Mr. Perceval complains of its being an extremely poor place for birds, but was much pleased to have obtained a second specimen of *Machæ-rhamphus anderssoni*, "with a bat in its stomach" (*cf.* P. Z. S. 1899, p. 714).

Mr. E. G. B. MEADE-WALDO, we believe, has not yet returned from Tangier, where he has passed the winter. We hope soon to receive an account of his excursion into the Great Atlas in 1901, and further information on the new birds lately characterized by him in the Bull. B. O. C. (xii. p. 27).

THE IBIS.

EIGHTH SERIES.

No. VII. JULY 1902.

XXIII.—*On the Birds of the Gold Coast Colony and its Hinterland.* By Capt. BOYD ALEXANDER.

[Concluded from p. 333.]

(Plates VIII. & IX.)

180. *CHÆTURA USSHERI* Sharpe.

Chætura ussheri Hartert, Cat. B. xvi. p. 488, pl. x.

Two adult males from Gonieri, Gold Coast Hinterland.

This species appears to be rare in collections. There are three specimens from Cape Coast in the British Museum.

We obtained one of our birds out of a pair that were breeding in the hollow trunk of a baobab-tree. It was impossible to see the nest; the birds went down into the trunk from a hole at the top of the tree.

181. *CYPSELUS AFFINIS* Hardw.

Micropus affinis Hartert, Cat. B. xvi. p. 453.

Kwobia, several specimens.

Found in small colonies in the Hinterland around the native villages, making use of the huts to build in.

“*April 14, Gambaga.*—Within the last few days, rain having fallen, a number of these Swifts appeared flying round the native huts and tall baobab-trees. Their flight is strong and very steady, as they glide at times through the air with motionless wings. They breed in April and are said to be resident at Gambaga.”

182. *TACHORNIS PARVA* (Licht.).

Tachornis parva Hartert, Cat. B. xvi. p. 463 (1892) ; id. Nov. Zool. vi. p. 411.

Gambaga.

These specimens belong to the pale form of the species.

183. *CAPRIMULGUS RUFICOLLIS* Temm.

Caprimulgus ruficollis Saunders, Man. Brit. B. p. 259 ; Hartert, Cat. B. xvi. p. 531.

An adult female, March 28, 1901, Gambaga.

This was the only occasion on which we observed this Nightjar at Gambaga. It was a solitary individual, and to all appearances a migrant.

I have carefully examined the British Museum examples of this species. In the collection there are several pale isabelline specimens from Spain, Morocco, and Algeria. The pale plumage has generally been considered to denote a variety of the adult. It is, however, I think, nothing more than the first winter dress of the young bird. Specimens from Spain obtained in May—the breeding-season—and also an example (ad. ♂) from Ben Moussar, Algeria, are darker and much more shaded with rufous. From the same locality as the latter bird there is a female in the pale plumage, that is, having the under parts shaded with isabelline ; the feathers of the chest mottled and narrowly barred with grey, so as to form an irregular band across the chest. This specimen is identical with another from Morocco, and with an immature female obtained in August 1869 at Grenada, Spain. The Ben Moussar male example, however, agrees perfectly with our female from Gambaga ; but both shew slight indications of their first winter plumage, a few of the chest-feathers being still mottled and barred with grey, and the general coloration a shade paler than the specimens from Spain.

Three fairly distinct phases in the plumage of this species may accordingly be observed—the pale isabelline coloration of the first winter plumage, gradually passing into a more rufous shade, and then becoming deeper and darker in the adult breeding-dress.

Unfortunately, with the exception of a nestling, there are

no specimens of this bird in the British Museum from Tunis. That country is supposed to have a separate resident form, *C. ruficollis desertorum* (Erlang. J. f. O. 1899, p. 521).

184. *CAPRIMULGUS SHARPII* Alexander.

Caprimulgus sharpei Alexander, Bull. B. O. C. xii. p. 29 (November 1901).

Two adult males from Gambaga.

Similar to *C. trimaculatus*, but smaller and darker; upper parts less spotted, especially on the nape, and more uniform; under parts with the blackish bars on the chest running into each other, which causes this part to appear much darker than in *C. trimaculatus*. The two species may be compared as follows:—

C. sharpii.

Ad. ♂. Gambaga, Feb. 22, 1901. Total length (measured in the flesh) 9·3 inches, wing 7, tail 5·1, tarsus 0·06. Iris black. Sexual organs in breeding condition.

C. trimaculatus.

Ad. ♂. Rustenburg, South Africa. Total length 10·5 inches, wing 7·8, tail 5·8.

C. trimaculatus is a South-African species, of which our bird is the northern form.

We met with only two specimens of this new Nightjar at Gambaga, where it appears to be uncommon. It inhabits tree-grown kopjes, and is extremely hard to discover, since its plumage assimilates so well with the black slabs of rock, which it never seems to leave.

185. *MACRODIPTERYX LONGIPENNIS* (Shaw).

Macrodipteryx macrodipterus Hartert, Cat. B. xvi. p. 594; Reichen. J. f. O. 1897, p. 24 (Togoland); Sharpe, Bull. B. O. C. x. p. vii (Gambaga).

Gambaga and Salaga.

This Nightjar is common at Gambaga, being found in colonies in the open bush-land. On Dec. 28 a part of the native village took fire. It was quite a sight to see these Nightjars flitting to and fro near the burning houses,

catching the insects driven from the huts. They appeared suddenly in numbers on the scene as if from nowhere. Their shaft-feathers looked like small birds following them wherever they went, as they sailed backwards and forwards before the firelight.

It is interesting to watch this Nightjar courting his mate. Just as dusk is coming on the female appears from the adjoining bush and drops noiselessly on the road. She does not wait long before the male alights right in front of where she is sitting. Then the long wing-pinions are raised so that they droop towards her*. Should the female shift her position, the male gives chase, to alight once again, like a feather-weight, in front of her.

186. *SCOTORNIS CLIMACURUS* (Vieill.).

Scotornis climacurus Hartert, Cat. B. xvi. p. 596; id. Nov. Zool. vi. p. 410 (Gambaga).

Gambaga, Karaga, and Accra.

By no means common in the Hinterland, frequenting in pairs the dried-up beds of streams. At Accra it was fairly numerous. It has not yet been recorded from Togoland.

187. *EURYSTOMUS AFER* (Lath.).

Eurystomus afer Sharpe, Cat. B. xvii. p. 30; Reichen. J. f. O. 1897, p. 20 (Togoland); Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Gambaga and Sang.

188. *EURYSTOMUS GULARIS* Vieill.

Eurystomus gularis Sharpe, Cat. B. vii. p. 32; Reichen. J. f. O. 1897, p. 21 (Togoland).

Fumusu.

189. *CORACIAS ABYSSINICUS* Bodd.

Coracias abyssinicus Sharpe, Cat. B. xvii. p. 19; Reichen. J. f. O. 1897, p. 20 (Togoland); Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Gambaga.

Common in the open country, where it is found in pairs.

* Cf. Dict. of Birds, p. 641.

190. *CORACIAS NÆVIUS* Daud.

Coracias nævius Sharpe, Cat. B. xvii. p. 24; Reichen. J. f. O. 1897, p. 54 (Togoland); Hartert, Nov. Zool. vi. p. 408 (Gambaga).

Karaga.

191. *DICROCERCUS FURCATUS* (Stanl.).

Dicrocercus furcatus Sharpe, Cat. B. xvii. p. 42; Reichen. J. f. O. 1897, p. 23 (Togoland); Hartert, Nov. Zool. vi. p. 410 (Gambaga).

Gambaga.

A rare migrant in the Hinterland, frequenting the wooded banks of streams.

192. *MELITTOPHAGUS PUSILLUS* (Müll.).

Melittophagus pusillus Sharpe, Cat. B. xvii. p. 47; Reichen. J. f. O. 1897, p. 23 (Togoland); Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Gambaga and Salaga.

A resident in the Hinterland. Iris red; legs and feet brown.

193. *MELITTOPHAGUS GULARIS* (Shaw & Nodd.).

Melittophagus gularis Sharpe, Cat. B. xvii. p. 50; Hartert, Nov. Zool. vi. p. 410.

Prahsu and R. Volta.

A rare bird, found only in the forest-district.

194. *MELITTOPHAGUS BULLOCKI* (Vieill.).

Melittophagus bullocki Sharpe, Cat. B. xvii. p. 51; Reichen. J. f. O. 1897, p. 23 (Togoland); Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Upper White Volta River and Gambaga.

Found in the vicinity of water. Not common.

195. *MEROPS ALBICOLLIS* Vieill.

Merops albicollis Sharpe, Cat. B. xvii. p. 76; Reichen. J. f. O. 1897, p. 23 (Togoland); Hartert, Nov. Zool. vi. p. 409 (Gold Coast).

Kwissa and Kumasi.

Common in the forest during October; observed in small parties.

196. *MEROPS NUBICUS* Gm.

Merops nubicus Sharpe, Cat. B. xvii. p. 85; Reichen. J. f. O. 1897, p. 23 (Togoland); Hartert, Nov. Zool. vi. p. 409 (Gambaga).

So, Northern Territory.

A migrant in the Hinterland. These birds are fond of visiting the bush-fires, around which many may often be seen darting upon insects, regardless of the hot flames.

197. *IRRISOR ERYTHORHYNCHUS* (Lath.).

Irrisor erythrorhynchus Salvin, Cat. B. xvi. p. 19 (1892); Grant, Bull. B. O. C. xii. p. 37.

Irrisor viridis senegalensis Reichen. J. f. O. 1897, p. 24 (Togoland); Hartert, Nov. Zool. vi. p. 410 (Gambaga).

Binduri (north of Gambaga).

Found in the open country in small parties. Breeds in holes in the baobab-trees.

198. *IRRISOR BOLLII* Salv.

Irrisor bollii Salvin, Cat. B. xvi. p. 20.

Kwissa, an adult male.

199. *LOPHOCEROS SEMIFASCIATUS* (Hartl.).

Lophoceros semifasciatus Grant, Cat. B. xvii. p. 402; Reichen. J. f. O. 1897, p. 20 (Togoland).

Prahsu, Kwissa, and Fumsu.

Very common. Native name "Chinchinna."

200. *LOPHOCEROS NASUTUS* (Linn.).

Lophoceros nasutus Grant, Cat. B. xvii. p. 406; Reichen. J. f. O. 1897, p. 20 (Togoland); Hartert, Nov. Zool. vi. p. 410 (Gambaga).

Kintampo and Gambaga.

Common in the open country.

201. *LOPHOCEROS HARTLAUBI* (Gould).

Lophoceros hartlaubi Grant, Cat. B. xvii. p. 403.

Prahsu, Fumsu, and Kwissa.

Rare, and observed only in the depths of the forest.

202. *ORTHOLOPHUS LEUCOLOPHUS* (Sharpe).

Ortholophus leucolophus Grant, Cat. B. xvii. p. 426.

Prahsu and Fumsu.

This bird keeps much to the thickets, wending its way with agility through the maze of branches. Iris bluish black ; legs and feet bluish slate-coloured, with the pads dirty yellow.

203. *CERYLE MAXIMA* (Pall.).

Ceryle maxima Sharpe, Cat. B. xvii. p. 118 ; Reichen. J. f. O. 1897, p. 22 (Togoland).

River Volta.

204. *ISPIDINA PICTA* (Bodd.).

Ispidina picta Sharpe, Cat. B. xvii. p. 191 ; Reichen. J. f. O. 1897, p. 22 (Togoland) ; Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Cape Coast, Kintampo, and Gambaga.

205. *HALCYON SEMICÆRULEUS* (Forsk.).

Halcyon semicæruleus Sharpe, Cat. B. xvii. p. 232 ; Reichen. J. f. O. 1897, p. 21 (Togoland) ; Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Gambaga and Salaga.

206. *HALCYON CHELICUTI* (Stanley).

Halcyon chelicuti Sharpe, Cat. B. xvii. p. 239 ; Reichen. J. f. O. 1897, p. 21 (Togoland) ; Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Kumasi, Kintampo, Gambaga, and Pong.

207. *HALCYON SENEGALENSIS* (Linn.).

Halcyon senegalensis Sharpe, Cat. B. xvii. p. 242 ; Reichen. J. f. O. 1897, p. 21 (Togoland).

Monse Hills and Kwissa.

This Kingfisher is very shy, always keeping to the tops of the tall forest-trees, whence it utters a loud running chatter, generally heard towards evening.

208. *HALCYON FORBESI* Sharpe.

Halcyon forbesi Sharpe, Cat. B. xvii. p. 247, pl. vi. fig. 2 ;

Reichen. J. f. O. 1897, p. 21 (Togoland) ; Hartert, Nov. Zool. vi. p. 409 (Gambaga).

Salaga and Yeji.

We found this remarkable Kingfisher along the shady belts of trees on the streams. It was a shy bird and by no means common, besides being locally distributed. The cry uttered by the male was loud and harsh. Towards evening it was frequently observed to mount high in the air, where it would remain for some time, hovering after the manner of a Kestrel. It breeds in April.

209. *TURACUS MACRORHYNCHUS* (Fraser).

Turacus macrorhynchus Shelley, Cat. B. xix. p. 441 (1881).
Prahsu, Fumsu, and Kwissa.

In the adult male the upper mandible is yellow, orange at the lower part of the base, the lower mandible red, the iris bluish black, the eyelids are coral, and the legs and feet black.

210. *MUSOPHAGA VIOLACEA* Isert.

Musophaga violacea Shelley, Cat. B. xix. p. 448 ; Reichen. J. f. O. 1897, p. 13 (Togoland) ; Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Gambaga.

This species haunts the vicinity of streams and is generally observed in pairs. The male, in the mating-season, which is in April, utters a turkey-like gobble.

211. *SCHIZORHIS AFRICANA* (Lath.).

Schizorhis africana Shelley, Cat. B. xix. p. 450 ; Reichen. J. f. O. 1897, p. 14 (Togoland) ; Hartert, Nov. Zool. vi. p. 411 (Gambaga).

White Volta River.

This species inhabits open tree-grown country and is generally found in pairs. It always selects the topmost boughs of a tree upon which to alight.

212. *CEUTHMOCHARES FLAVIROSTRIS* (Swains.).

Ceuthmochares flavirostris Shelley, Cat. B. xix. p. 401 ; Reichen. J. f. O. 1897, p. 15 (Togoland).

Prahsu and Fumsu.

A common bird in the forest, haunting the thickets, through which it works its way with wonderful agility. Bill yellow; iris red.

213. *CENTROPUS LEUCOGASTER* (Leach).

Centropus leucogaster Shelley, Cat. B. xix. p. 358; Reichen. J. f. O. 1897, p. 14 (Togoland).

Prahsu.

We often heard the deep bubbling notes of this bird in the middle of the night during October, which is the breeding-season.

214. *CENTROPUS MONACHUS* Rüpp.

Centropus monachus Shelley, Cat. B. xix. p. 359.
Pong.

215. *CENTROPUS SENEGALENSIS* (Linn.).

Centropus senegalensis Shelley, Cat. B. xix. p. 360; Reichen. J. f. O. 1897, p. 14 (Togoland); Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Krachi and Pong.

Our immature birds are very much barred on the mantle, back, and wings, while the under parts as far as the breast are strongly washed with tawny rufous.

This species is very common both in the Hinterland and in the colony.

216. *COCCYSTES GLANDARIUS* (Linn.).

Coccytes glandarius Shelley, Cat. B. xix. p. 212; Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Gambaga.

217. *COCCYSTES CAFER* (Licht.).

Coccytes cafer Shelley, Cat. B. xix. p. 221; Reichen. J. f. O. 1897, p. 15 (Togoland); Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Kwissa and Gambaga.

218. *CHRYSOCOCCYX SMARAGDINEUS* (Swains.).

Chrysococcyx smaragdineus Shelley, Cat. B. xix. p. 280.
Fumsu.

219. *CHRYSOCOCCYX KLAASI* (Steph.).

Chrysococcyx klaasi Shelley, Cat. B. xix. p. 283; Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Prahsu.

220. *CHRYSOCOCCYX CUPREUS* (Bodd.).

Chrysococcyx cupreus Shelley, Cat. B. xix. p. 285; Reichen. J. f. O. 1897, p. 15 (Togoland); Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Karaga.

221. *INDICATOR SPARRMANNI* Steph.

Indicator indicator (Gm.); Shelley, Cat. B. xix. p. 5; Hartert, Nov. Zool. vi. p. 412 (Gambaga).

Upper White Volta River.

222. *INDICATOR STICTITHORAX* Reichen.

Indicator stictithorax Shelley, Cat. B. xix. p. 8.

Kwissa.

This rare Honey-guide is represented in the British Museum by a specimen from the Cameroon Mountains (*H. H. Johnston*). It appears to be found only in mountainous districts. Our bird was obtained on the Monse Hills, 1300 feet.

223. *INDICATOR MINOR* Steph.

Indicator minor Shelley, Cat. B. xix. p. 9.

Kintampo and Gambaga.

224. *INDICATOR WILLCOCKSI*. (Plate VIII.)

Indicator willcocksii Alexander, Bull. B. O. C. xii. p. 11 (October 1901).

Most nearly allied to *I. exilis*, but slightly larger. Upper parts golden olive, striped with blackish centres to the feathers, almost uniform on crown and nape, the blackish centres becoming more strongly marked on the back; no dusky band below the cheeks and ear-coverts; sides of neck and under parts ashy olive, fading into creamy white on the lower breast and abdomen; wing and central tail-feathers black, edged with golden yellow. Total length (measured in the flesh) 4·5 inches, wing 2·8, tail 2, tarsus 0·4.

A single female specimen of this new species was obtained at Prahsu in October 1901. We frequently observed this little *Indicator* whenever a swarm of flying ants appeared. It would dart upon them and then retire to its original perch to devour its prey.

225. *POGONORHYNCHUS DUBIUS* (Gm.).

Pogonorhynchus dubius Shelley, Cat. B. xix. p. 15; Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Busunu and Gambaga.

This bird is seen singly or in pairs, frequenting open country. Towards evening it repairs to holes in trees to roost.

The sexes are alike in plumage.

226. *MELANOBUCCO BIDENTATUS* (Shaw).

Melanobucco bidentatus Shelley, Cat. B. xix. p. 18.

Pogonorhynchus bidentatus Reichen. J. f. O. 1897, p. 17 (Togoland).

Lower White Volta River.

227. *MELANOBUCCO VIEILLOTI* (Leach).

Melanobucco vieillotii Shelley, Cat. B. xix. p. 26; Hartert, Nov. Zool. vi. p. 412 (Gambaga).

Pogonorhynchus vieillotii Reichen. J. f. O. 1897, p. 17 (Togoland).

Kintampo and Gambaga. Breeds in March. Common. Iris red.

228. *TRICHOLÆMA HIRSUTA* (Swains.).

Tricholæma hirsutum Shelley, Cat. B. xix. p. 28; Reichen. J. f. O. 1897, p. 17 (Togoland).

Prahsu, Fumsu, and Kwissa.

Common in the forest.

229. *GYMNOBUCCO CALVUS* (Lafr.).

Gymnobucco calvus Shelley, Cat. B. xix. p. 34.

Gymnobucco peli Hartl. Orn. W.-Afr. p. 175 (1857); id. J. f. O. 1861, p. 263.

Prahsu and Fumsu.

The sexes of all our specimens were determined. The

adult males have the frontal tufts and the outer portions of the secondaries narrowly edged with olive and the under parts washed with the same colour. The females have no frontal tufts, but carry a small tuft of bristles on the chin: they are a little larger than the males, and have no olive edges to the secondaries. The immature bird has no tufts, either on the front or on the chin; the upper mandible is blackish.

This species is numerous in the forest. Whenever flying ants begin to swarm, numbers of these birds appear on the scene and catch them with avidity.

230. *BARBATULA CHRYSOCOMA* (Temm.).

Barbatula chrysocoma Shelley, Cat. B. xix. p. 42; Reichen. J. f. O. 1897, p. 16 (Togoland).

Gambaga.

Rare, and only once observed.

231. *BARBATULA LEUCOLÆMA* Verr.

Barbatula leucolæma Shelley, Cat. B. xix. p. 45; Reichen. J. f. O. 1897, p. 16 (Togoland).

Cape Coast and Pong.

232. *BARBATULA SCOLOPACEA* (Temm.).

Barbatula scolopacea Shelley, Cat. B. xix. p. 47; Reichen. J. f. O. 1897, p. 17 (Togoland).

Prahsu and Kwissa.

233. *TRACHYPHONUS GOFFINI* Schl.

Trachyphonus goffini Shelley, Cat. B. xix. p. 106.

Prahsu and Kwissa.

234. *CAMPOTHERA PUNCTATA* (Valenc.).

Campothera punctata Hargitt, Cat. B. xviii. p. 96; Shelley, B. Afr. i. p. 131.

Dendromus punctatus Reichen. J. f. O. 1897, p. 18 (Togoland); Hartert, Nov. Zool. vi. p. 411 (Gambaga).

Sang and Kwobia.

Common at these localities.

235. *CAMPOTHERA MACULOSA* (Valenc.).

Campothera maculosa Hargitt, Cat. B. xviii. p. 104.

Prahsu.

Rare.

236. *CAMPOTHERA NIVOSA* (Swains.).

*Campothera nivos*a Hargitt, Cat. B. xviii. p. 108.

Dendromus nivosus Reichen. J. f. O. 1897, p. 18 (Togoland).
Prahsu.

237. *DENDROPICUS LAFRESNAYI* Malh.

Dendropicus lafresnayi Hargitt, Cat. B. xviii. p. 301 ;
Reichen. J. f. O. 1897, p. 17 (Togoland).

Upper White Volta, Krachi, and Pong.

In our immature bird (♂) the upper parts are duller than in the adult; there is no red on the upper tail-coverts, and the occiput and crown are dark brown, some of the feathers being tipped with red; the forehead is dark brown, mixed with the light brown of the new feathers.

In the adult male obtained at Pong there is no tinge of red on the upper tail-coverts, though the red on the crown has been almost assumed.

The specimen from the Volta, which is fully adult, has the upper tail-coverts tinged with red and marked with faint dusky bars, while the back, scapulars, and rump are uniform golden olive. The immature male of this species is therefore nearly similar to the adult female, especially resembling the latter in possessing the dark brown head before the red feathers are assumed. We much doubt whether *D. sharpii* of Oustalet (see Cat. B. xviii. p. 302) is specifically distinct from the present species, if the lack of red on the upper tail-coverts in the former is the only distinguishing character.

238. *IYNGIPICUS OBSOLETUS* (Wagl.).

Iyngipicus obsoletus Hargitt, Cat. B. xviii. p. 336; Hartert,
Nov. Zool. vi. p. 411 (Gambaga).

Only observed at Gambaga, where it is scarce.

239. *MESOPICUS GOERTAN* (Müll.).

Mesopicus goertan Hargitt, Cat. B. xviii. p. 368; Reichen.
J. f. O. 1897, p. 18 (Togoland).

Kintampo, Krachi, and Gambaga.

We met with this species a few miles from the forest-belt, where in the more or less open country it is fairly numerous and is found in pairs. This Woodpecker does not utter

any cry or alarm-note; but the male, when flying, makes a peculiar noise with its wings, which can be heard at some distance. On hearing it, the female at once quits the tree where she is and follows the male.

240. *MESOPICUS PYRRHOGASTER* (Malh.).

Mesopicus pyrrhogaster Hargitt, Cat. B. xviii. p. 373; Reichen. J. f. O. 1892, p. 18 (Togoland).

Prahsu, Fumsu, and Kwissa.

Common in the forest, haunting the dead trees in couples, the two birds always keeping close to one another. In order to ensure their places being known to each other, a loud drilling tap, answered immediately by the partner, is made use of.

241. *VINAGO WAALIA* (Gm.).

Vinago waalia Salvad. Cat. B. xxi. p. 15; Hartert, Nov. Zool. vi. p. 406 (Gambaga).

Observed in small flocks at Gambaga.

242. *VINAGO CALVA* (Temm. & Knip).

Vinago calva Salvad. Cat. B. xxi. p. 20.

Treron calva Reichen. J. f. O. 1897, p. 8 (Togoland).

The female of this Pigeon differs from the male in being smaller, in having the vinous patch on the shoulder much less, and little or no French grey on the nape.

243. *COLUMBA GYMNOCYCLA* Gray.

Columba gymnocyclus Salvad. Cat. B. xxi. p. 257; Hartert, Nov. Zool. vi. p. 406 (Gambaga).

Gambaga.

Our two specimens, which are in fresh plumage, are a little paler on the upper parts than specimens from the Gambia in the British Museum. Intermediate shades, however, seem to occur between the dark forms and our paler examples, the dark birds probably coming from countries nearer the coast, where the rainfall is greater. We only observed these Pigeons at Gambaga, where they were very wild. They breed in holes in steep rocky declivities. About the middle of April they appeared in small flocks, in company with

Columba guinea, on the newly-sown grain-plots outside the village. This seems to be a decidedly local species.

244. *COLUMBA GUINEA* Linn.

Columba guinea Salvad. Cat. B. xxi. p. 266; Hartert, Nov. Zool. vi. p. 406 (Gambaga).

Gambaga.

During the dry season, from November to the beginning of April, these Pigeons are seldom seen in the Hinterland, but as soon as the first rain has fallen they appear on the newly-sown fields in large flocks, and may be seen from early morning till evening.

245. *TURTUR SEMITORQUATUS* (Rüpp.).

Turtur semitorquatus Salvad. Cat. B. xxi. p. 416; Reichen. J. f. O. 1897, p. 6 (Togoland); Hartert, Nov. Zool. vi. p. 406 (Gambaga).

White Volta River.

This Dove is usually found on the wooded banks of the rivers.

246. *TURTUR VINACEUS* (Gm.).

Turtur vinaceus Salvad. Cat. B. xxi. p. 428; Reichen. J. f. O. 1897, p. 7 (Togoland); Hartert, Nov. Zool. vi. p. 406 (Gambaga).

Kintampo and Binduri.

This is an abundant species in the Hinterland.

Turtur senegalensis was also observed at Gambaga, where it is plentiful.

247. *CHALCOPELIA PUELLA* (Schl.).

Chalcopelia puella Salvad. Cat. B. xxi. p. 523; Reichen. J. f. O. 1897, p. 8 (Togoland).

Prahsu and Fumsu.

This beautiful little Dove is rare, keeping chiefly to the thickest part of the forest. In the Hinterland beyond the forest-region it is represented by *C. afra*, which is common.

248. *PŒOCEPHALUS KINTAMPOENSIS* Alexander.

Pœocephalus kintampoensis Alexander, Bull. B. O. C. xii. p. 10, Oct. 1901.

This is a northern form of *P. fuscicollis*, but differs in having the under-parts, rump, and upper tail-coverts bright *bluish green* instead of *grass-green*. The wing-coverts, secondaries, and feathers of the back are olive-brown, strongly washed with verditer. The bill is stronger than in *P. fuscicollis*. Tip of lower mandible .05 inch, width of lower mandible 1.0, width of upper mandible 1.0. Total length (measured in the flesh) 12.2 inches, wing 8.5, tail 4.3, tarsus 0.8.

The specimen described is an old female obtained at Kintampo on Dec. 7, 1900. We noticed several of these Parrots at Kintampo, but it was next to impossible to get near them, since they were very shy and always flew high, uttering from time to time a guttural cry.

249. *PŒOCEPHALUS VERSTERI* (Goffin).

Pæocephalus versteri Salvad. Cat. B. xx. p. 372; Reichen. J. f. O. 1897, p. 13 (Togoland); Hartert, Nov. Zool. vi. p. 408 (Gambaga).

Kwobia.

This Parrot is of local distribution, but in favoured localities, especially in the vicinity of water and acacia-trees, it is numerous, and towards evening may be seen in numbers on the wing.

250. *PALÆORNIS DOCILIS* (Vieill.).

Palæornis docilis Salvad. Cat. B. xx. p. 447; Hartert, Nov. Zool. vi. p. 408 (Gambaga).

Upper White Volta River and Sekwi.

This species, like the former, is very locally distributed. We observed it near Busu in December in very large flocks, frequenting the guinea-corn plantations, the corn being then nearly ripe. Our next observation of the species was near Salaga in May, when we obtained a single specimen out of a pair.

251. *AGAPORNIS PULLARIA* (Linn.).

Agapornis pullaria Salvad. Cat. B. xx. p. 510; Reichen. J. f. O. 1897, p. 13 (Togoland).

Krachi.

252. *GLAUCIDIUM PERLATUM* (Vieill.).

Glaucidium perlatum Sharpe, Cat. B. ii. p. 209 (1875); Reichen. J. f. O. 1897, p. 13 (Togoland); Hartert, Nov. Zool. vi. p. 408 (Gambaga).

Ad. ♂. Total length (measured in the flesh) 7·6 inches, wing 4·1, tail 3·6.

Ad. ♀. Total length (measured in the flesh) 8·2 inches, wing 4·2, tail 3·5.

253. *GLAUCIDIUM ALBIVENTER*. (Plate IX.)

Glaucidium albiventer Alexander, Bull. B. O. C. xii. p. 10.

Similar to *G. perlatum* (Vieill.), but with the breast, abdomen, and under tail-coverts pure white; the feathers of the flanks with only a few streaks of brownish black. Total length (measured in the flesh) 8·2 inches, wing 4·5, tail 3·5, tarsus 0·98.

We obtained a single female specimen of this Owl out of a pair at Kwobia in May 1901.

254. *BUBO CINERASCENS* Guérin.

Bubo cinerascens Sharpe, Cat. B. ii. p. 32; Reichen. J. f. O. 1892, p. 234 (Togoland); Hartert, Nov. Zool. vi. p. 408 (Gambaga).

Gambaga.

Inhabits tree-grown kopjes in the open country. It is a scarce bird.

255. *BUBO LACTEUS* Temm.

Bubo lacteus Sharpe, Cat. B. ii. p. 33 (1875).

Kwobia.

Our male specimen differs from the female in being a little darker on the back and in having the chest-feathers much less vermiculated with white, contrasting with the lighter coloration and breast.

256. *FALCO RUFICOLLIS* Swains.

Falco ruficollis Sharpe, Cat. B. i. p. 404.

Gambaga.

257. *TINNUNCULUS ALOPEX* Heugl.

Cerchneis alopeX Sharpe, Cat. B. i. p. 432; Hartert, Nov. Zool. vi. p. 407 (Gambaga).

Gambaga.

Our female specimen (2/3/91) agrees with an example of the same sex in the British Museum from Bogosland.

This rare Hawk is a migrant in the Hinterland. It was observed in pairs from December till the beginning of February.

Adult female. Total length (in the flesh) 16·5 inches, wing 11·6, tail 8·8, culmen 0·8, tarsus 1·9. Iris brown; legs and feet greenish yellow; claws brownish black; bill bluish horn-coloured.

258. *HALIAËTUS VOCIFER* (Daud.).

Haliaëtus vocifer Sharpe, Cat. B. i. p. 310.

Common on the lower reaches of the Volta River.

259. *DRYOTRIORCHIS SPECTABILIS* (Schl.).

Dryotriorchis spectabilis Shelley, Ibis, 1874, p. 90; Sharpe, Cat. B. i. p. 279; Oberholser, Proc. U.S. Nat. Mus. xxii. p. 26 (Liberia).

An adult male (17/3/00) from Prahsu.

260. *ASTURINULA MONOGRAMMICA* (Temm.).

Asturinula monogrammica Sharpe, Cat. B. i. p. 275.

Kaupifalco monogrammicus Reichen. J. f. O. 1897, p. 10 (Togoland).

Gambaga.

During the dry season in the Hinterland, from November to May, all the Falcons are more plentiful than at other periods of the year. This is accounted for by the long grass being burnt by the natives after the rains, when the ground, being more clear, affords a better opportunity to the Hawks for observing their prey.

261. *ASTUR SPHENURUS* (Rüpp.).

Astur sphenurus Sharpe, Cat. B. i. p. 112; Reichen. J. f. O. 1897, p. 10 (Togoland); Hartert, Nov. Zool. vi. p. 407 (1899) (Gambaga).

Gambaga.

262. *ARDEA BUBULCUS* (Aud.).

Herodias lucidus Shelley, B. Afr. i. p. 157.

Bubulcus ibis Reichen. J. f. O. 1897, p. 6 (Togoland).

Bubulcus lucidus Sharpe, Cat. B. xxvi. p. 213.

Busunu.

This Heron frequents the old guinea-corn fields.

263. BUTORIDES ATRICAPILLA Afz.

Butorides atricapilla Sharpe, Cat. B. xxvi. p. 172; Reichen.

J. f. O. 1897, p. 6 (Togoland); Hartert, Nov. Zool. vi. p. 407 (Gambaga).

Gambaga.

Usually found near running streams.

264. SCOPUS UMBRETTA Gm.

Scopus umbretta Sharpe, Cat. B. xxvi. p. 288; Reichen.

J. f. O. 1897, p. 5 (Togoland).

Gambaga.

265. CICONIA ALBA Bechst.

Ciconia ciconia Sharpe, Cat. B. xxvi. p. 299.

At Daboya and Gambaga there were large colonies of the White Stork, especially at the former place, where the tall baobab-trees were covered with their bulky nests. They breed in December, and leave with their young in May, before the rains commence.

266. PHALACROCORAX AFRICANUS (Gm.).

Phalacrocorax africanus Grant, Cat. B. xxvi. p. 407; Reichen. J. f. O. 1897, p. 2 (Togoland)

River Volta.

267. PLOTUS LEVAILLANTI Licht.

Plotus levaillanti Shelley, B. Afr. i. p. 161; Reichen. J. f. O. 1897, p. 2 (Togoland).

Plotus rufus Grant, Cat. B. xxvi. p. 412.

River Volta.

268. LIMNOCORAX NIGER (Gm.).

Limnocorax niger Sharpe, Cat. B. xxiii. p. 150.

River Volta.

269. TURNIX LEPURANA (Smith).

Turnix lepurana Grant, Cat. B. xxii. p. 539.

Accra.

Common on the Accra Plains.

270. EXCALFACTORIA ADANSONI (Verr.).

Excalfactoria adansoni Grant, Cat. B. xxii. p. 255.

Pong.

Found on waste land, covered with short dry grass. Observed in coveys of five or six birds.

271. FRANCOLINUS ALBIGULARIS Gray.

Francolinus albigularis Grant, Cat. B. xxii. p. 149; Hartert, Nov. Zool. vi. p. 405 (Gambaga).

Francolinus buckleyi Grant, Cat. B. xxii. p. 145.

Gambaga and Sang.

The two male specimens of this species in the British Museum, one of which is the type, differ from the Gambaga examples in having the under parts uniform and of a warmer buff colour. In our specimens of both sexes the feathers of the fore-neck, sides of chest, and flanks are broadly edged with rufous, and the under parts are a paler buff. The Gambian examples, judged by their spurs and their clearer breasts, are older birds. Our female obtained on Jan. 27th differs from our male specimens in the following characters:—The creamy-white shaft-stripes on the lower hind-neck and back are narrower, and the greater portion of the feathers are grey with black transverse bars on the margins of their webs. A chain of blackish-brown spots commences from the lores and circumscribes the whole of the throat. On the webs of some of the chest-feathers are thin blackish bars, while a few of the flank-feathers have their inner webs chestnut, broadly barred with black.

This specimen can certainly be united to the examples of *F. buckleyi* in the British Museum, obtained by Capt. Shelley at Accra. We have, therefore, no hesitation in confirming Mr. Hartert's opinion on this matter, and in making *F. buckleyi* synonymous with *F. albigularis*.

At Gambaga we found this Francolin rare and locally distributed, and only observed it on two occasions.

272. FRANCOLINUS BICALCARATUS (Linn.).

Francolinus bicalcaratus Grant, Cat. B. xxii. p. 160;

Reichen. J. f. O. 1897, p. 7 (Togoland) ; Hartert, Nov. Zool. vi. p. 405 (Gambaga).

Gambaga and Suger (Gold Coast Hinterland).

This Francolin is abundant. We have seen as many as forty birds in one flock.

In our series there are two forms. An adult male (with well-developed spurs) and a female, obtained at Suger, have the feathers of the chest and the remainder of the under parts warm buff, contrasting with the pale whitish buff of the other specimen.

273. *PTILOPACHYS FUSCUS*.

Ptilopachys fuscus Grant, Cat. B. xxii. p. 256 ; Reichen. J. f. O. 1897, p. 9 (Togoland) ; Hartert, Nov. Zool. vi. p. 405 (Gambaga).

Gambaga.

Not common, generally found in small flocks in thick short grass. Towards evening dead fallen trees are often made use of as look-out posts. During the heat of the day rocky kopjes in the vicinity of running streams are frequented. When disturbed the birds take refuge in the crannies of the rocks. The male looks very much like a little bantam cock, extremely pert and always strutting about with its tail raised.

The end of February is the breeding-season, when they are found in pairs.

The male differs from the female in having the patch on the breast buff-coloured instead of white.

274. *NUMIDA MELEAGRIS* (Linn.).

Numida meleagris Grant, Cat. B. xxii. p. 375 ; Reichen. J. f. O. 1897, p. 8 (Togoland).

Everywhere abundant, from the White Volta northwards to Gambaga. Many individuals are kept by the natives in a domestic state, especially by the chiefs of the large villages.

275. *PTEROCLES QUADRICINCTUS* Temm.

Pterocles quadracinctus Grant, Cat. B. xxii. p. 32 ; Hartert, Nov. Zool. vi. p. 406 (Gambaga).

Gambaga.

In January we found this Sand-Grouse in pairs. Capt. Gifford obtained a young bird in the same month.

There seems no doubt that the bird breeds in the Hinterland. During the dry season it is fairly numerous, but as soon as the rains commence and the bush-grass becomes thick it disappears.

276. OTIS DENHAMI Children.

Otis denhami Shelley, B. Afr. i. p. 185.

Neotis denhami Sharpe, Cat. B. xxiii. p. 302.

Salaga.

At the end of March a few pairs of this Bustard appeared in the open localities around Gambaga. At Salaga, where the country is still more open, we came across two young birds.

277. OTIS MELANOGASTER Rüpp.

Otis melanogaster Shelley, B. Afr. i. p. 185.

Lissotis melanogaster Sharpe, Cat. B. xxiii. p. 306.

Kwobia.

A single individual observed. It was very tame and easily approached.

278. OTIS SENEGALENSIS Vieill.

Otis senegalensis Shelley, B. Afr. i. p. 186.

Trachelotis melanogaster Sharpe, Cat. B. xxiii. p. 310.

Binduri (north of Gambaga).

Five individuals of this rare Bustard were seen on stretches of stone-strewn ground at Binduri, about 60 miles north of Gambaga. We never observed it anywhere else.

279. LOBIVANELLUS ALBICEPS (Gould).

Lobivanellus albiceps Reichen. J. f. O. 1897, p. 4 (Togoland); Hartert, Nov. Zool. vi. p. 404 (Gambaga).

River Volta.

280. TRINGOIDES HYPOLEUCUS (Linn.).

Totanus hypoleucus Reichen. J. f. O. 1897, p. 4 (Togoland).

Tringoides hypoleucus Sharpe, Cat. B. xxiv. p. 456; Hartert, Nov. Zool. vi. p. 404 (Gambaga).

River Fum, Fumsu.

281. *ÆDIGNEMUS SENEGALENSIS* Swains.

Ædignemus senegalensis Sharpe, Cat. B. xxiv. p. 10; Reichen. J. f. O. 1897, p. 3 (Togoland).
Binduri (north of Gambaga) and River Volta.

282. *PLUVIANUS ÆGYPTIUS* (Linn.).

Pluvianus ægyptius Sharpe, Cat. B. xxiv. p. 32; Reichen. J. f. O. 1897, p. 3 (Togoland); Hartert, Nov. Zool. vi. p. 404 (Gambaga).

River Volta (near Yeji). Also observed near Gambaga.
Common, frequenting the rivers in small parties.

283. *GLAREOLA MARCHII* Oust.

Galactochrysea marchei Sharpe, Cat. B. xxiv. p. 726.
Glareola megapoda Reichen. J. f. O. 1897, p. 3 (Togoland).
River Volta (near Krachi).

We found this bird in small colonies, frequenting the rocky portions of the river from Krachi downwards.

We never met with *G. cinerea*, though it has been obtained on this river, and by Capt. Gifford on the Upper White Volta, near Gambaga. It must be a rare bird.

Our examples of *G. marchii* are paler on the upper and under parts than the specimens in the British Museum from the Niger. The habit which this bird has of basking on the rocks in the full glare of the sun must soon bleach the plumage and cause the gloss to disappear from the upper parts.

XXIV.—*Field-notes on the Birds of Bellenden-Ker, Queensland.* By KENDAL BROADBENT.

THE following list comprises the names of the species which I met with on Mount Bellenden-Ker, the highest mountain in Queensland, during the months of June, July, and August 1889. As specimens from that locality have been from time to time mentioned in various works, I think that it may be of interest to the readers of 'The Ibis' to have full particulars in their hands. The aggregate would have been greater had

it not been that winter weather forces the birds down to the lower lands, while the migrants have at that season left the district. Rain and mist, moreover, were great hindrances to my work*.

1. *ASTUR APPROXIMANS* Vig. et Horsf. (Campbell, op. cit. p. 6).

Found up to an altitude of 3000 feet.

2. *ACCIPITER CIRRHOCEPHALUS* (Vieill.) (op. cit. p. 9).
Occurred on Mount Sophia at 1800 feet.

3. *NINOX STRENUA* Gould (op. cit. p. 48).

A pair of these birds were seen at Palm Camp, alt. 4000 feet. They are true denizens of the mountains and are always found in dark scrubby gullies. I have shot specimens on the Sea-View Range, at the back of Cardwell, and on Mount Echo up the Herbert River, as well as on the Luluki River (New Guinea).

4. *STREPERA GRACULINA* (White) (op. cit. p. 58).

Specimens of this bird, which is common all over the Cairns and Cardwell districts, were obtained at 4000 feet. In its nest the Channel-billed Cuckoo (*Scythrops nova-hollandiæ*) lays its eggs. I have seen about three hundred of these Crow-Shrikes, in January, in company with quite a hundred Channel-billed Cuckoos, in the mountains twenty-five miles from Cardwell, at the head of the Murray River.

5. *PTILORHIS VICTORIÆ* Gould (op. cit. p. 69).

This is the Queensland "Bird of Paradise," common at 3000 feet on Bellenden-Ker, and also found at Herberton (4500 feet), Barnard's Isle off Cardwell, and in the big scrub from forty miles out of Townsville to as far as the Bloomfield River, over a range of two hundred miles. It is more plentiful on the western side than on the eastern fall, as there are big open scrubs on that side in which Cassowaries and *Orthonyx* abound.

[* The arrangement followed is that of Mr. A. J. Campbell's recent work on the Nests and Eggs of Australian Birds, to which references are added.—EDD.]

6. *ORIOLOUS AFFINIS* Gould (op. cit. p. 79).

Found at 1800 feet on Bellenden-Ker; common throughout North Queensland to Cape York.

7. *SPHECOTHERES FLAVIVENTRIS* Gould (op. cit. p. 84).

On Bellenden-Ker at 3000 feet, and from Cardwell to Cape York.

8. *COLLYRIOCINCLA HARMONICA* (Lath.) (op. cit. p. 88).

At 2000 feet on Bellenden-Ker. This species is a grand whistler in the morning. In Gippsland (Victoria) I have heard it mock the Lyre-birds. It is found throughout the States to the Gulf of Carpentaria. On Sweer's Island the birds seem somewhat paler than elsewhere, but are undoubtedly identical and have the same habits.

9. *COLLYRIOCINCLA BOWERI* Ramsay (op. cit. p. 92).

I shot a specimen of this bird on the Sea-View Range, and another on Bellenden-Ker at 4000 feet. This is the largest species of the genus and has a grand call-note. It ranges over Cardwell back-scrubs, Herberton (4000 feet), Bellenden-Ker, and North-west Australia.

10. *PINAROLESTES RUFIGASTER* (Gould) (op. cit. p. 93).

Found at 3000 feet on Bellenden-Ker, and all over the Cardwell district to Cape York.

11. *GRAUCALUS MENTALIS* Vig. & Horsf. (op. cit. p. 98).

Found at Granite Creek, Bellenden-Ker. This is a West-Queensland bird, and is met with at Chinchilla (380 feet) and at Port Moresby.

12. *LALAGE LEUCOMELÆNA* (Vig. & Horsf.) (op. cit. p. 104).

Found on Bellenden-Ker up to 1800 feet. Very common at all times in the scrubs near Brisbane, at Nerang Creek, and at Cardwell.

13. *MICRÆCA FLAVIGASTRA* Gould (op. cit. p. 107).

Met with on Barnard's Spur (1800 feet). Found all through the Cardwell district to Cape York, where it was first discovered by MacGillivray.

14. *RHIPIDURA ALBISCAPA* Gould (op. cit. p. 108).

Obtained at Palm Camp (4000 feet).

15. *RHIPIDURA RUFIFRONS* (Lath.) (op. cit. p. 112).

Common at 4000 feet on Bellenden-Ker.

16. *ARSES KAUPI* Gould (op. cit. p. 126).

At the pools of Bellenden-Ker, Cardwell, the mouth of the Herbert River, and in the Cape York scrubs.

17. *PÆCILEDRYAS CAPITO* (Gould) (op. cit. p. 152).

One of the common birds on the top of South Peak (5000 feet), where the specimens were very small. It ranges over the coast-scrubs to Cooktown, and is one of the earliest morning songsters.

18. *MALURUS AMABILIS* Gould (op. cit. p. 176).

Found on Bellenden-Ker at 1400 feet. It extends from north of the Herbert River to Cape York, and is common in the Cardwell district.

19. *MALURUS DORSALIS* (Lewin) (op. cit. p. 179).

On Bellenden-Ker at 1800 feet. It ranges over the Cardwell district to Cooktown, but is not found at Cape York.

20. *SCENOPEUS DENTIROSTRIS* (Rams.).

Tectonornis dentirostris, Campb. op. cit. p. 207.

This is one of my discoveries. I first shot a specimen at Cardwell in 1882. It is found at 5000 feet on Bellenden-Ker and all over the Herberton district (3000 feet). This bird is one of the grandest mockers in Australia. It imitates all the species in the district, and attracts them to its vicinity. Its playground consists of a space scratched clean and decorated with seven or nine large leaves laid flat upon it.

21. *PRIONODURA NEWTONIANA* De Vis (op. cit. p. 212).

I shot a young male of this bird in the Tully scrubs in 1882. In 1889, at Herberton, I found plenty of old males in their bowers and shot a good number of them and of young females. On Bellenden-Ker this species is found up

to 5000 feet, while below 3000 feet it is never seen except as a straggler. It is a grand mocker, imitating all the birds in the scrubs. It makes a great bower 8 feet high. I have never found the nest or eggs, which appear to be still unknown.

22. *SERICORNIS CITREOGULARIS* Gould (op. cit. p. 243).

Found at 3000 feet, and common on the mountains in the Brisbane scrubs. It makes a long hanging nest of moss at the end of a branch.

23. *SERICORNIS MAGNIROSTRIS* (Gould) (op. cit. p. 247).

Found at 5200 feet on Bellenden-Ker and in the Brisbane scrubs.

24. *SERICORNIS GUTTURALIS* De Vis (op. cit. p. 252).

This ground-bird was originally discovered by the writer on Bellenden-Ker at 5200 feet. It occurs also in the Herberton scrubs at 4500 feet.

25. *ORTHONYX SPALDINGI* Ramsay (op. cit. p. 252).

On Bellenden-Ker at 5200 feet, in Herberton scrubs, and over all the range from Townsville to Cooktown; it occurs on both sides of the range as far as the scrub extends, but is not found at Cape York or at Brisbane. The district just south of the Herbert River, and thence to Bloomfield, is its main resort. This is a ground-bird and makes a nest like a Lyre-bird, laying one almost round white egg.

26. *PSOPHODES CREPITANS* (Lath.) (op. cit. p. 265).

Common on the top of Bellenden-Ker (5000 feet). The examples procured were much smaller than those from Gippsland, where they are very large; but the South-Queensland form has the same call-note, makes the same nest, and has the same habits as the other.

27. *CRATICUS QUOYI* (Less.) (op. cit. p. 299).

This species ascends the mountains up to 3000 feet, and is found in the mangrove-swamps at the mouths of the creeks and rivers all along the coast from the Herbert River to Cape York.

28. *CRATICUS RUFESCENS* De Vis (op. cit. p. 306).

This is a discovery of mine. It was first found on the Barrow River, and thence sent to Ramsay, who thought that it was the young of *C. quoyi*, which, however, is entirely black. I found nestlings in Cardwell. This is a true mountain-bird, found in scrubby gullies; a pair are nearly always to be observed together. I saw it in the Mulgrave scrubs on Bellenden-Ker up to 1800 feet, and at Herberton up to 4000 feet, in June 1889. It is not found at Cape York or in the intermediate country.

29. *EOPSALTRIA CHRYSORRHOA* Gould (op. cit. p. 315).

Found at 4000 feet; the first bird to be heard in the morning. It occurs on the east coast of Queensland.

30. *HETEROMYIAS CINEREIFRONS* Rams. (op. cit. p. 317).

This is a mountain-species, found on the Sea-View Range at 4000 feet and on all the heights about Cardwell. I never saw it on the coast or in the lowlands.

31. *PACHYCEPHALA GUTTURALIS* (Lath.) (op. cit. p. 219).

One of the commonest birds on the high peaks of Bellenden-Ker, especially around our camp on South Peak (5000 feet). It is plentiful in Brisbane scrubs and at Cardwell.

32. *PACHYCEPHALA RUFIVENTRIS* (Lath.) (op. cit. p. 324).

Found on the grassy spurs of Mt. Barnard (1800 feet).

33. *CLIMACTERIS LEUCOPHÆA* (Lath.) (op. cit. p. 332).

Palm Camp (4000 feet). This species occurs nearly all over Eastern Australia and on the Herberton Range (4500 feet), where the individuals are smaller and darker in plumage than elsewhere.

34. *SITTELLA STRIATA* Gould (op. cit. p. 343).

Found at Granite Creek Camp, Bellenden-Ker (380 feet), and along the east coast from Herbert River to Cooktown.

35. *MYZOMELA SANGUINOLENTA* (Lath.) (op. cit. p. 352).

Granite Creek Camp (380 feet). This species occurs also in the Cardwell and Brisbane districts, but not at Cape York.

36. *PTILOTIS LEWINI* Swains. (op. cit. p. 386).

Common all through the mountains up to 4000 feet; also at Cardwell and Cape York. One of the most abundant birds of Queensland, especially in the Brisbane scrubs.

37. *PTILOTIS FRENATA* Ramsay (op. cit. p. 388).

This is another of my discoveries. It was first shot at Cardwell in 1882. It feeds on mistletoe, and comes to the lowlands in January, February, and March (the rainy season). In June (winter) it goes to the mountains, and sometimes reaches an altitude of 5200 feet.

38. *PTILOTIS MACLEAYANA* Rams. (op. cit. p. 389).

A species discovered by me at Cardwell in 1882. It was seen at Palm Camp (4000 feet). It is found all through the Cardwell district, but not at Cape York or south of the Herbert River.

39. *DICÆUM HIRUNDINACEUM* (Shaw) (op. cit. p. 437).

Mount Barnard (1800 feet). Common all through Queensland, Victoria, and New South Wales. It feeds on mistletoe-berries, and is the only member of its genus found in Australia.

40. *PARDALOTUS PUNCTATUS* (Shaw) (op. cit. p. 444).

This beautiful bird is abundant up to 1800 feet, while it also occurs throughout nearly all Queensland on the coast side, but not at Cape York.

41. *ARTAMUS LEUCOGASTER* (Valenc.) (op. cit. p. 461).

Common from 380 feet to 1800 feet. This species ranges from the Herbert River to Cape York on the coast, and I have also seen it in New Guinea (Port Moresby).

42. *ÆGINTHA TEMPORALIS* (Lath.) (op. cit. p. 490).

Granite Creek Camp (380 feet). Common in Brisbane.

43. *PITTA STREPITANS* Temm. (op. cit. p. 526).

Found at 3000 feet. Common at Brisbane, Cardwell, and Cape York in February.

44. COLLOCALIA FRANCICA (Gmel.) (op. cit. p. 532).

This beautiful little Swift is common at the base of Bellenden-Ker and up to an altitude of 1800 feet. I have seen it catching flies in the lowlands even when it was nearly dark, and then moving off towards the mountains. It breeds in the rocky gorges of the Coast Range, from the Herbert River to above Cairns, but is not found so far north as Cape York. It is most common in the low country on wet days.

45. MEROPS ORNATUS Lath. (op. cit. p. 545).

This Bee-eater was common on sunny days at Granite Camp (380 feet), and was also seen in June at an altitude of 1800 feet on Mount Barnard.

46. DACELO GIGAS (Bodd.) (op. cit. p. 551).

Found up to 2000 feet.

47. DACELO LEACHI Vig. & Horsf. (op. cit. p. 555).

Granite Camp (380 feet).

48. TANYSIPTERA SYLVIA Gould (op. cit. p. 561).

A nest was seen at 1800 feet. This bird, a true denizen of the scrub, bores into a termites' nest and lays four beautiful roundish white eggs. It delights in the gullies of the mountains, from north of the Herbert River to Cape York, during October, November, and December. It feeds its young on termites.

49. CACOMANTIS VARIOLOSUS (Horsf.) (op. cit. p. 572).

Found at 3000 feet on Bellenden-Ker. This handsome bird used to utter its mournful call all night, while we were shooting tree-kangaroos in the mountains. It is not found near Brisbane.

50. CENTROPUS PHASIANUS (Lath.) (op. cit. p. 590).

On Bellenden-Ker at 1800 feet. Found all along the east coast of Queensland, and there called the Swamp-Pheasant. It builds in low grassy flats and hatches its own eggs.

51. TRICHOGLOSSUS NOVE-HOLLANDIÆ (Gm.) (op. cit. p. 592).

I saw a small flock of these Parrakeets flying over South

Peak (5200 feet), in company with some Scaly Parrakeets (*Trichoglossus chlorolepidotus*). The bird is common all over Queensland on the coast side.

52. *CALYPTORHYNCHUS BANKSI* (Lath.) (op. cit. p. 606).

Common at 1800 feet on Bellenden-Ker. Ranges over Queensland, Nerang Creek, North Brisbane, Cardwell, and all the coast-scrubs to Cooktown. It is not found on the west side of the range.

53. *CACATUA GALERITA* (Lath.) (op. cit. p. 611).

Common on Bellenden-Ker up to 4000 feet. In the Cardwell district it feeds on palm-berries.

54. *APROSMICTUS CYANOPYGIUS* (Vieill.) (op. cit. p. 628).

Found at 3000 feet on Bellenden-Ker, as well as on the east coast of Queensland to Cooktown. It does not occur at Cape York.

55. *PLATYCERCUS ELEGANS* Gm. (op. cit. p. 629).

South Peak Camp, Bellenden-Ker, at 5200 feet. It does not occur on the west fall of the range, but only in the Warwick district in South Queensland.

56. *MEGALOPREPIA MAGNIFICA* (Temm.) (op. cit. p. 666).

On Bellenden-Ker, at Dalrymple's Gap Range; on the Clarence and Richmond Rivers, Nerang Creek, and the coast-scrubs of Queensland to Cooktown. The specimens are smaller as you get nearer to Cardwell.

57. *LOPHOLÆMUS ANTARCTICUS* (Shaw) (op. cit. p. 671).

On Bellenden-Ker at 1800 feet. Ranges from Brisbane over all the intermediate country to Cape York, where the specimens are comparatively small.

58. *COLUMBA LEUCOMELA* Temm. (op. cit. p. 672).

Mr. Meston found this species breeding on the tops of fern-trees at 5000 feet on Bellenden-Ker in March. It occurs also at Cardwell and Brisbane.

59. *MACROPYGIA PHASIANELLA* (Temm.) (op. cit. p. 674).

Found on Bellenden-Ker at 4000 feet. It ranges all along the east coast to Cooktown, but is not found at Cape York.

60. *CHALCOPHAPS CHRYSOCHLORA* (Wagl.) (op. cit. p. 679).

Found at 3000 feet on Bellenden-Ker. Occurs from Brisbane to Cape York.

61. *CATHETURUS LATHAMI* (Lath.) (op. cit. p. 708).

Nests up to 3000 feet on Bellenden-Ker.

62. *MEGAPODIUS DUPERREYI* Less. & Garn. (op. cit. p. 715).

At 3000 feet on Bellenden-Ker, but not found on the west side of the range. This bird makes a large mound, thirty feet in diameter.

63. *NYCTICORAX CALEDONICUS* (Gm.) (op. cit. p. 962).

Found on Mount Sophia, Bellenden-Ker. Herbert River is the southern boundary of this bird's range. It breeds on the islands and not on the mainland. Every morning it flies to the mountains, and thence returns at night or before sun-down to the scrubs, where it feeds on fruits.

64. *CASUARIUS AUSTRALIS* Wall (op. cit. p. 1069).

Found up to 3000 feet from north of the Herbert River to Newcastle Bay and to thirty miles south of the Cape, beyond which it does not occur; nor has it been observed on the other side of the coast-range.

XXV.—On the various Plumages of *Buteo solitarius*.

By H. W. HENSHAW.

As it is the only raptorial bird indigenous to the Hawaiian Islands, the "*Io*," as the natives term *Buteo solitarius*, possesses unusual interest. It is true that the Marsh-Hawk (*Circus hudsonius*) has been taken on Oahu, while the Fish-Hawk (*Pandion haliaëtus*) has been observed on several of the islands; but the occurrence of the former, and probably of the latter, is purely accidental.

The Short-eared Owl (*Asio accipitrinus*) is also, and has been from time immemorial, a common resident on the islands. It is, however, almost indistinguishable from its relative of the mainland, whence it originally came; and can be separated, if at all, only by its slightly smaller size.

So that it is permissible to regard the *Buteo* as the only truly endemic Raptor.

From whatever quarter the Io originally found its way to the islands, and whatever are its nearest relatives, it is a true *Buteo*, not only in structure, but also in habits.

It is a solitary sluggish bird, sitting most of its time motionless on the low branches of trees, digesting its food or on the look out for a fresh supply. Once on the wing, it is a slow but powerful flier, alternately progressing by a few strong beats, and using the impetus thus gained to glide straight ahead on outstretched wings. Whether moving in this fashion, or circling far above the forest, the bird might readily be taken by the casual observer for quite a different species, the Red-tailed Hawk of America.

The food of the Io is preferably mice and small rats. Birds of any kind do not come amiss, when it can catch them, which is very rarely; and frequently it descends to such humble fare as large spiders or the larvæ of a sphinx-moth. I have found the stomachs of several individuals simply crammed with spiders, and the belly and thigh-feathers all gummed up with the silken webs and secretions.

The Io is not a bird of the deep forest, and rarely or never enters its recesses, but prefers open woods in which to nest, and, when hunting, frequents the edges of the forest and the clearings.

This Hawk breeds in spring, though apparently never very early, and some of the Hawaiian woodland birds are leading about their young ere the Io is ready to deposit its brown-blotched eggs in its rudely made nest.

As a rule, this *Buteo* is silent, but in the love-season its voice is frequently to be heard, as several males contend for the favour of a female. Its cries are not exactly like those of any Hawk known to the writer, although they are unmistakably Buteonine. Once mated I feel sure that the union is for life, and a given locality is almost invariably inhabited by a pair. On the other hand, the Io rarely or never hunts in pairs, and the bird is, on the whole, well named *solitarius*.

It is not, however, of the bird's general habits that I would here speak, but of its plumages, which, it would seem, have not been at all well understood. Of these there are two which are entirely distinct, viz. a light and a dark phase, each having two stages, a juvenile and an adult. So different are these phases that extreme examples might well be mistaken for different species. In life the adult of the light phase has the appearance of a white or albino Hawk; while the adult of the dark phase looks quite black or melanistic.

This dichromatism may aptly be compared with that which distinguishes the American Screech-Owl (*Megascops asio*), with its red and grey phases, since it characterizes the bird in all stages of growth, is dependent upon neither sex nor season, and mating birds may or may not be alike in colour.

The two phases of this Hawk may be described as follows:—

LIGHT PHASE.

Adult stage.—Head and hind-neck white, or buffy white, the feathers of the former with narrow blackish shaft-streaks, those of the latter tipped with large roundish spots of the same. Sides of head and neck buffy, with more or less brown; back blackish brown; rump lighter brown tinged with ochraceous; primaries blackish brown, the inner webs above the notch white; inner webs of secondaries black barred, and tipped, as are the wing-coverts, with whitish and ochraceous; tail lighter brown, with faint marblings and a wash of ochraceous; rectrices with eight or nine narrow, zigzag, more or less well-defined, blackish bars, which rarely entirely cross the whitish inner webs; under parts buff or rusty buff, with a few feathers (sometimes but one or two) on the flanks with brown shaft-streaks and small terminal spots of same. Legs and feet greenish yellow; soles light yellow; bill blackish, but plumbeous at the base of the lower mandible; iris light hazel.

Juvenile stage.—Above and on the sides of the head chocolate-brown, deepest on the hind-neck; the feathers lightly bordered with greyish and rusty; rectrices ashy brown, with irregular bars of blackish across each feather;

below white, the feathers of the breast and sides tinged with ochraceous, and everywhere, except on the throat and belly, with brown spots and shaft-streaks; thighs and tibiae faintly barred and streaked with lighter brown.

The difference between the two stages of the light phase is very great, but a series of twelve specimens shews very clearly the transition from the extremely young bird (probably of the first year) to the final white-headed adult stage. The adult of this phase might well be called the White-headed Hawk. The juvenile is truly a Brown Hawk, as it was called in Cook's time. Successive seasons witness the loss of the heavy brown markings underneath till the almost pure buff of the adult is attained. The younger the bird, the darker the head, and the purer the white of the more brown-streaked under parts. The older the bird, the whiter the head, the fewer and more buffy the brown markings below.

The colour of the iris corresponds to the general coloration of the individual, being very light hazel or dark brown according as the bird is light or dark.

Some excellent illustrations of this Hawk are given in the 'Birds of the Hawaiian Islands' from specimens obtained by Mr. Scott B. Wilson. The buff-coloured bird, however, is of a deeper hue than any specimen which the writer has ever seen, and the head is by no means so white as that of several in the series before him. Nor has he ever seen a specimen in which the tail-markings are so entirely obliterated as in the specimen figured.

The first figure, opposite page 1, is that of a young bird in the juvenile or brown stage, and affords an excellent idea of this stage of the light phase above described. Mr. Gurney, as quoted in the 'Birds of the Hawaiian Islands,' was in error in considering the brown plumage to be that of the adult.

DARK PHASE.

Adult stage.—Above blackish brown. Primaries still darker; inner webs above the notch whitish and black barred; secondaries and tertiaries barred across both webs;

under wing-coverts faintly ferruginous, with blackish spots and streaks; under parts blackish, the feathers on the thighs and tibiæ having a ferruginous wash.

Juvenile stage.—Above dark chocolate-brown, darkest on the upper back; feathers of the occiput and hind-neck lightly bordered with ochraceous; tail lighter brown, each feather barred with black or with bars indicated; below rusty buff, each feather barred or streaked with blackish brown, which is the prevailing colour on the sides of the neck, flanks, and tibiæ.

A series of eleven specimens sufficiently well illustrate the changes from the juvenile phase to the fully adult. The latter is practically black.

As the juvenile bird approaches the adult state it gradually doffs the rusty tinge above and below, which is the characteristic feature of the immature bird, and becomes blacker and blacker. The writer has recently seen a living individual in the dark phase but a few months old, and its appearance indicates that a bird must be three or four years old before reaching the final adult plumage.

Buteo solitarius inhabits both the dry and the rainy side of Hawaii. On the rainy side the dark phase largely predominates, at least 75 per cent. of the Hawks belonging to it. The author is at present unable to state whether or not the light-coloured phase is more abundant in the dry region than it is in the wet. Judging by analogy this should be the case.

In this species, the presence or absence of black barrings on the tail and their comparative degree of intensity seems to be largely individual attributes, and to be fully indicative neither of age nor of sex. It is true that in the series of twelve specimens in the white phase the bars are present and well marked in all the juveniles, and there seems to be a progressive loss of these bars as the adult state is reached. They are indicated in all the adults, and are better defined on the outer rectrices than on the inner, being almost obliterated on the middle pair; but in none of the adults are they so well defined as in the juveniles.

If this could be shown to be the rule in the present species

it would be contrary to the general law in American Hawks, in which, if I am not mistaken, the barring is better defined and more constant in the adult stage. In the series of specimens in the dark phase, however, the barring of the tail is seen to be more of an individual character. In most, though not all, of the adults the barring is well defined. So it is also in most of the juveniles, but in one, the youngest, perhaps, of the series, it is scarcely indicated at all, and the same remark holds good of two individuals in an intermediate stage.

It is perhaps idle to speculate as to the origin and significance of these two very different phases of plumage. As, however, the dark phase so largely predominates, at least on the rainy and windward side of the island, it has occurred to the writer that the progenitors of this Hawk, when they first came to the island, may have been light-coloured; and that now, after a long residence, the bird is in process of undergoing transformation into an almost black form.

In this connexion it is noticeable that white is almost entirely absent from Hawaiian birds, the majority of which incline strongly towards greens and yellows, with a minority which are clad in red and black. *Chasiempis* alone of the woodland birds exhibits much white in its plumage, and even this bird has less white and is of a deeper and more lustrous brown in the rainy regions of Hawaii than in the drier districts, there being, indeed, two forms or colour-varieties*.

The feathering of most of the island forms, especially of the *Drepanididæ*, which form the bulk of the indigenous birds both in individuals and species, is exceedingly abundant and compact, and is possessed of deep and lustrous tints, all of which are indicative of a cool and rainy climate, that necessitates a warm covering and confers a rich, though by no means necessarily bright or gaudy, coloration.

It is to be remembered in this connexion, however, that there are at least two American Hawks, *Buteo swainsoni* and

* A discussion in detail of these colour-varieties will be found in a paper by the author in a recent issue of 'The Auk.'

B. borealis calurus, which are dichromatic, as is also the American Screech-Owl; and in neither instance, so far as the writer is aware, is there any cause to believe that the species is changing into darker or lighter forms.

Below are appended the measurements (in inches) of twenty-seven specimens, from which will be apparent at a glance, among other points, the constantly larger size of the female :—

Males.

No.	Date.	Wing.	Tail.	Tarsus.	Bill with cere.	Cere.	Remarks.
2.	Dec. 3, 1899.	10·00	6·75	2·75	1·15	·80	Adult, light phase.
5.	Nov. 15, "	10·88	6·75	2·45	1·18	·75	Juv., dark phase.
6.	June 9, "	10·37	·00	2·70	1·08	·76	Juv., light phase.
7.	" 9, "	10·25	6·50	2·63	1·19	·80	Adult, dark phase.
8.	Nov. 4, "	10·18	6·16	2·65	1·19	·80	Adult, dark phase.
9.	" 14, "	10·89	6·45	2·69	1·19	·80	Nearly adult, dark phase.
11.	Feb. 9, 1900.	10·25	6·50	2·69	1·20	·87	Juv., dark phase.
15.	" 11, "	10·00	6·13	2·63	1·19	·84	Adult, dark phase.
18.	" 27, "	10·12	6·75	2·68	1·19	·85	Adult, light phase.
20.	Mch. 10, "	10·40	6·60	2·75	1·15	·80	Adult, dark phase.
24.	Sept. 16, "	10·25	7·00	2·88	1·15	·78	Adult, light phase.
25.	" 27, "	10·50	7·10	2·67	1·18	·87	Juv. light phase.
26.	" 27, "	10·95	6·00	2·75	1·13	·78	Adult, dark phase.
27.	Dec. 14, "	9·75	6·50	2·65	1·15	·77	Adult, dark phase.
29.	Apr. 10, "	10·50	6·12	2·75	1·15	·77	Adult, dark phase.

Females.

No.	Date.	Wing.	Tail.	Tarsus.	Bill with cere.	Cere.	Remarks.
1.	Dec. 2, 1899.	11·25	7·00	2·84	1·25	·95	Juv., white phase.
3.	" 2, "	11·76	7·05	2·81	1·25	1·00	Adult, black phase.
4.	Jan. 12, 1900.	11·38	7·00	2·75	1·25	·95	Adult, dark phase.
10.	" 9, "	11·25	7·16	2·81	1·31	·94	Adult, white phase.
12.	Feb. 2, "	11·65	7·25	2·81	1·33	1·00	Adult, white phase.
14.	" 27, "	11·13	7·00	2·81	1·33	1·00	Adult, dark phase.
16.	" 18, "	11·54	7·50	2·95	1·35	·97	Juv., light phase.
17.	" 17, "	11·27	7·25	3·00	1·37	1·07	Adult, white phase.
21.	Apr. 21, "	11·75	6·90	2·85	1·30	1·00	Adult, white phase.
22.	Mch. 11, "	11·88	7·10	2·95	1·38	1·00	{ Juv., app. full-grown, light phase.
23.	Aug. 18, "	11·13	6·50	2·85	1·37	1·00	Juv., light phase.
28.	Apr. 3, "	11·30	6·75	2·85	1·40	1·00	{ Juv., dark phase; tail worn.

XXVI.—*On a Collection of Birds made on the White Nile between Khartum and Fashoda.* By W. R. OGILVIE-GRANT. *With an Introduction and Field-notes by R. M^cD. HAWKER.*

(Plates X. & XI.)

I. *Short Narrative of the Journey, by R. M^cD. HAWKER.*

WITH the object of collecting Natural History specimens, I left England at the end of December 1900, my intention being to go up the White Nile as far as its junction with the Sobat, and after travelling thence, in a south-easterly direction through the Nuer country to Lake Rudolf, to return home *viâ* Mombasa.

The Director of the Natural History Museum and Mr. Ogilvie-Grant provided me with letters of introduction to the officials in the Sudan, requesting them to give me every help to further my expedition, and I engaged the services of two taxidermists, Messrs. C. F. Camburn and J. R. Thurston.

Arriving at Port Said on January 1st, 1901, I proceeded to Cairo and called on Sir Rennell Rodd, who, on the production of my letters from the Natural History Museum, arranged with the Financial Secretary to have my heavy baggage passed unopened through the Customs. I also called on Lord Cromer, who kindly gave me a letter to the Sirdar, Sir Reginald Wingate, at Khartum.

On January 9th I was joined by my companion, Mr. G. H. Cheetham; on the 11th our baggage arrived at Cairo, and thanks to Dr. Keatinge, of the Cairo School of Medicine, was re-trucked at once for Chellal. Colonel Gordon, R.E., had kindly arranged with the Sudan Railway to have the baggage transported as soon as possible, so we left Cairo on the 12th with the hope that it would arrive at Khartum soon after us. It did not, however, reach that place till January 27th, and we had the mortification of seeing several shooting-parties, which arrived after us, starting up the White Nile sooner.

I called on the Sirdar and presented Lord Cromer's letter. The Sirdar informed me that we should be helped in every

way, but that we were not to go south of Fashoda. This was a disappointment, as I had made plans to be absent about two years, and had brought stores sufficient for that period. I had left London with the understanding that I should be able to go through to Mombasa, being assured that there would be no objection raised by the authorities, and that I should not require permission from the Foreign Office to do so.

Captain Parker, of the Intelligence Office, kindly arranged for the hire of two murkabs (native sailing-boats) and their crews for our use. These we got partially decked and had grass shelters erected over their sterns. We bought six camels, eight donkeys, and a pony, while a second pony was kindly lent us by Capt. Harold.

Our baggage having at last arrived, we spent several days in re-packing it, and got it and the transport-animals on board on February 1st, but, as that day was a Friday, the rias (captain) objected to starting, as he said that it would bring us bad luck. We let him have his way and started on the 2nd. The wind was from the north, and as the boats sailed well we made from thirty to sixty miles a day. The scenery of the banks on both sides of the river was most monotonous and barren for some distance, and, with the exception of a few very prickly acacias (*Mimosa asperata*) and *Ipomœa asarifolia*, a plant of the convolvulus family, with large green leaves and fruit, the country was almost devoid of vegetation.

There were myriads of Waterfowl and Waders feeding on the mud-banks, and Cranes, Storks, Herons, Spoonbills, Ducks, and Geese swarmed, while flocks of Doves kept flying down to the river to drink. Hippopotamuses and crocodiles, basking on some sand-bank, were occasionally seen. Near Ed-Duem the sunt-tree (*Acacia nilotica*) made its appearance, growing in belts along the river-bank. On the 6th we arrived at El-Kawa, which is about 130 miles south of Omdurman. Here we landed the ponies, as the rias wanted to get stores for the crew, and rode round the town with the Marmoor (Egyptian Magistrate) to see the sights. El-Kawa is built of grass huts, the streets being named after

British officers. When we returned to the boats we found that most of the crew and several of our servants were away; but having at last retrieved them, all in a more or less intoxicated condition, we once more set sail for the south. Next day we landed on Abba Island, which is about 30 miles long and well-wooded. We saw so many birds there that I determined to collect them on my return, but was prevented from doing so, many of my men being down with fever. On the 10th we stopped near Jebel Ain, one of the few hills which relieve the monotony of the White Nile scenery. The peaks rise abruptly from the plain and are formed of granite. We climbed up the largest hill, and, in doing so, saw a great many Guinea-fowl (*Numida ptilorhyncha*), while from the top we had a good view of the surrounding country, which was densely covered with acacia as far as we could see. Here we observed several herds of gazelles (*Gazella rufifrons*).

Several miles south of Jebel Ain we saw the tracks of elephants, which evidently came to the river to drink. On the 14th we arrived opposite Jebel Ahmed-Agha, another granite hill, and here one of the crew died. He had caught a chill after a too liberal bout of merissa at El-Kawa and contracted pneumonia. The native treatment finished him.

There was much wailing at his death, and the rias asked for cloth to bury him in, though he had plenty himself. A shallow trench sufficed for the grave, and the poor fellow's body was buried half an hour after he died. Next day we stopped at the camp of Lord St. Oswald and Mr. Willie James, the latter a well-known traveller in North-east Africa. They had had very little sport, and, unluckily, just after we left them, Mr. James contracted dysentery and was obliged to return to Khartum.

South of Jebel Ahmed-Agha big game was plentiful, and we saw buffalo, lion, roan antelope, waterbuck, and giraffe. We arrived at Kaka on the 24th, and met the Swedish Expedition under Dr. Jägerskiöld. They were collecting in all branches of zoology, the doctor being chiefly interested in parasites. Dr. Innes, of the Cairo Medical School, was

with them, and did us a good turn by prescribing for Mr. Cheetham, who had got a touch of the sun. We unloaded our transport-animals here, and I started off inland to have a look at the country. The path led through dense acacia-jungle, and we had to cut our way through it in many places. We camped at a swamp swarming with Ducks, chiefly Garganeys and Shovellers. The water was only about six inches deep, and was filthy with green slime and alive with all sorts of insects.

Next day we marched on and camped at another swamp, on which there were no Ducks at all, though Marabou-Storks were in large flocks. These birds, after drinking in the evening, marched off solemnly to some trees about half a mile distant from the swamp and flopped up into them to roost. The country consisted of a large plain covered with grass interspersed with belts of acacia. As there were very few birds, I returned to Kaka and sailed south, while the transport-animals were marched along the banks of the river. We now came in touch with the Dinkas, a fine race of people, who, though they thought clothes unnecessary, were very civil and pleasant. On the 20th we arrived at Fashoda. This place consists of the remains of an old Egyptian fort, to which Captain Marchand added a mud bastion facing the river and named "Bastion des Anglais." It was on a swamp and surrounded by swamps, while some Shilluk villages were built on dry ground near it. The country west of the fort in the dry season is a large plain with belts of acacia.

On the 27th we started west, and, marching along a khor, camped about 15 miles from Fashoda at an Arab village.

In the evening I saw some elephants feeding in a swamp, and next day went to get a nearer view of them, but, after much wading and swimming of khors, found that they had left the district. I saw two herds of giraffes, which were very tame and inquisitive, coming within two hundred yards to inspect us while we were sitting under the shade of a tree, and keeping parallel with us for some way when we moved on. The mosquitos in the khor were in clouds, and directly

after sundown we had either to sit in the smoke of the fire or retire under our mosquito-nets. My men got terribly bitten, as they had neglected to bring nets with them. Birds were scarce, and I saw only those of the same species as I had observed near the river. On returning to Fashoda, we found that four of our men and two of the crew had been locked up by the sergeant, as they had created a disturbance and done a bit of fighting while celebrating the feast of Bairan. I met Mr. Loat and Mr. Gunn, F.R.C.S., at Fashoda. The former was collecting fishes for the Egyptian Government, and had been as far south as Lake No. He had been very successful, but was handicapped by being unable to procure a sufficient supply of spirit, as the railway authorities were unwilling to take the risk of carrying it. Rain began to fall at Fashoda, and the men who had been with us inland were attacked by malaria, due most likely to the mosquito-bites, so we started on our return journey on April 3rd. On the 5th we camped about 30 miles north of Fashoda, and stopped there for ten days to collect. We got several buffalos, and shot a good many lions in that district. On the 15th we sailed north and stopped south of Kaka to collect till May 7th, but as all our men and most of the crew were suffering from fever we determined to return to Omdurman. The south wind was blowing regularly now, so we made good way and collected as we went. The swarms of Ducks and most of the Waders had disappeared, and only Geese and the regular summer residents remained. We arrived at Omdurman on May 26th and found it nearly deserted, as the officials had all moved over to their new quarters in Khartum.

The results of the expedition were satisfactory so far as the specimens of the larger mammals went, for we obtained the skins of buffalo, roan antelope, waterbuck, white-eared kob, tiang, gazelle, oribi, and reedbuck, besides killing eight lions and a leopard. We got only a few specimens of the smaller mammals. In birds I was disappointed, as I expected to get many more species; Doves and Weaver-birds swarmed, but other small kinds, especially Larks, were scarce. On

the whole the climate was good, the heat not being intense until we returned to Khartum. The travelling was easy, but the servants and men, with a few exceptions, were the worst that I have ever employed. From the officials we met with every help and kindness. I have particularly to thank Major Mathews and Captains Parker and Mosant, of the Intelligence Department, and Dr. Keatinge, of the Cairo Medical School. I have also to offer my best thanks to Mr. Ogilvie-Grant, who has kindly arranged and determined the birds that we procured, and who provided me beforehand with all the available information about the country.

II. *List of the Birds procured, by W. R. OGILVIE-GRANT ;
with Field-notes by R. M^cD. HAWKER.*

Although Mr. Hawker was disappointed with the results of this expedition as regards Birds, it will be seen that a very fine collection was brought home, and that many of the specimens are of very great interest and have led to important discoveries. As instances we may mention the Finch-Larks (*Pyrrhulauda*), the Chats (*Saxicola*), the Green-backed Warblers (*Camaroptera*), the Wood-Hoopoes (*Irrisor*), the Barbets (*Melanobucco*), and the Wood-Ibis (*Pseudotantalus*).

Species marked with an asterisk (*) were identified by Mr. Hawker, but are not represented in the collection.

To save repetition, the titles of several of the works quoted in this paper have been abbreviated as follows:—

Mr. Witherby's article (Ibis, 1901, pp. 237–278) is quoted as "Witherby" or "W."

Messrs. Grant and Reid's article (Ibis, 1901, pp. 607–699, pl. xiii.) is quoted as "Grant & Reid."

Messrs. N. C. Rothschild and Wollaston's article (Ibis, 1902, pp. 1–33, pl. i.) is quoted as "N. C. Roths. & Wollast." or "R. & W."

The following fifty-five species have been recorded by Mr. H. F. Witherby and by Messrs. N. C. Rothschild and Wollaston as occurring on the Lower White Nile between Abba Island and Khartum, but their names are not included

in Mr. Hawker's collection, which was chiefly made on the Upper White Nile, between Abba Island and Fashoda :—

Rhinocorax affinis. R. & W.
Spreo pulcher. W., R. & W.
Oriolus galbula. W.
Vidua principalis. R. & W.
Lagonosticta brunneiceps. R. & W.
Pytelia citerior. W.
Hypochera ultramarina. R. & W.
Hyphantornis galbula. W.
 „ *vitellinus.* R. & W.
Petronia pyrgita. R. & W.
Passer rufidorsalis. W., R. & W.
Emberiza flavigaster. W.
Calandrella brachydactyla. R. & W.
Ammomanes cinctura. R. & W.
 „ *deserti.* R. & W.
Pyrhulanda melanauchen. W.
 „ *frontalis.* R. & W.
Motacilla alba. R. & W.
 „ *vidua.* R. & W.
Anthus campestris. R. & W.
Lanius dealbatus. W., R. & W.
 „ *assimilis.* R. & W.
Sylvia nisoria. W.
 „ *rueppelli.* R. & W.
 „ *mystacea.* R. & W.
 „ *galactodes.* W., R. & W.
Phylloscopus trochilus. W.
Acrocephalus palustris. W.

Acrocephalus streperus. W.
Burnesia gracilis. R. & W.
Cisticola cisticola. R. & W.
 „ *aridula.* W., R. & W.
Monticola saxatilis. W.
 „ *cyanus.* R. & W.
Saxicola amphileuca. W.
Argya acaciæ. W., R. & W.
Cotile minor. R. & W.
 „ *rupestris.* W.
Hirundo smithi. R. & W.
Trachyphonus margaritatus. W., R. & W.
Caprimulgus eximius. W., R. & W.
Merops apiaster. W.
Lophoceros nasutus. W., R. & W.
Bubo desertorum. R. & W.
Circus pygargus. R. & W.
 „ *macrurus.* W., R. & W.
Falco tanypterus. W.
Gyps fulvus. R. & W.
Vultur monachus. R. & W.
Garzetta garzetta. W.
Eupodotis arabs. W., R. & W.
Cursorius gallicus. W.
Tringa alpina. W.
Hydrochelidon hybrida. W.
Pteroclorus senegallus. W., R. & W.

A number of the eggs collected by Mr. Hawker have been described by Mr. Oates in the Appendix to the second volume of the 'Catalogue of Birds' Eggs in the British Museum,' which is duly quoted in the present paper. The remainder will appear in the subsequent volumes of that work.

1. *HETEROCORAX CAPENSIS.*

Heterocorax capensis Licht.; Grant & Reid, p. 610.

a. ♀. Kaka, 28th Feb. No. 85.

b. ♂. Kaka, 8th March. No. 120.

c. ♂. 20 miles N. of Fashoda. No. 344 †.

d, e. ♂ ♀. Kaka, 4th May. Nos. 432, 433 †.

f. ♂. Kaka, 4th May. No. 434.

Iris dark hazel; bill, legs, and feet black.

[I only met with the African Rook in a small district extending from the south and west of Kaka to Fashoda. It was generally found near the villages, and had a very harsh cry. When sitting on a tree it puffs out the feathers on its head and neck, which gives it the appearance of having a very large head. Its nest is generally placed on the end of a very thin bough; it is beautifully made of smallish thorn-branches with an outer lining of fibre and an inner lining of the felted hair of animals. The eggs, three in number, are rosy white, freckled and blotched with maroon and dark cinnamon.—R. M. H.]

2. CORVUS SCAPULATUS.

Corvus scapulatus Daud.; Witherby, p. 249; Grant & Reid, p. 610; N. C. Roths. & Wollast. p. 13.

a. ♂. Jebel Ain, 11th Feb. No. 48.

b. ♂. Kaka, 4th May. No. 431 †.

Iris hazel; bill, legs, and feet black.

[The White-bellied Crow is the commonest member of the Corvidæ on the White Nile. It is very plentiful south of Jebel Ain. I took several nests. They are placed at the end of very thin boughs, and are therefore rather difficult to get at. I shot one bird off a nest, and three days afterwards I saw that its mate was sitting. Eggs were procured at about 20 miles north of Fashoda.—R. M. H.]

3. *CORVUS UMBRINUS.

Corvus umbrinus Sundev.; Grant, Nov. Zool. vii. p. 245 (1900); Witherby, p. 250; N. C. Roths. & Wollast. p. 13.

[I only observed one pair of this Raven on the White Nile, and these were seen on Abba Island.—R. M. H.]

† Breeding.

‡ Breeding; three eggs taken.

4. LAMPROTORNIS PORPHYROPTERUS.

Lamprotornis porphyropterus Rüpp. ; Sharpe, Cat. B. Brit. Mus. xiii. p. 156 (1890) [part.] ; Grant, Ibis, 1900, p. 121.

Lamprotornis brevicaudus Sharpe, Bull. B. O. C. vi. p. xlviii (1897) ; id. Ibis, 1891, p. 591.

a. ♀. Fashoda, 26th March. No. 189.

b-e. ♂ ♀. 20 miles N. of Fashoda, 6th-11th April. Nos. 298 †, 301, 302, 312 †.

Iris pale straw-coloured ; bill and legs black.

In the 'Catalogue of Birds' (xiii. p. 156) two rather well-marked forms are united under the title *L. porphyropterus* Rüpp :—

(A) A smaller shorter-tailed species is found in Southern Abyssinia, Somaliland, Uganda, the Equatorial Province, and at Fashoda. This bird is the true *L. porphyropterus* Rüpp., the type of which was procured in Shoa. There are two cotypes in the British Museum received from Rüppell in 1845, but these are omitted from the list of specimens given in the 'Catalogue of Birds' (xiii. p. 156). Only specimens *h, i, k, l* belong to the true *L. porphyropterus*.

(B) A larger longer-tailed species inhabits the highlands of Bogosland, and ranges south-westwards to the lower valley of the White Nile and Kordofan. This bird should bear the name *L. æneocephalus* Heugl. (*cf.* J. f. O. 1863, p. 22). Specimens *a* to *g* in the above-mentioned list belong to this form.

Dr. Sharpe (*cf.* Bull. B. O. C. vi. p. xlviii, recognised the fact that he had united two distinct forms under the heading *L. porphyropterus*, and proposed to separate the shorter-tailed southern species under the name *L. brevicaudus* ; but, as shown above, this name is synonymous with typical *L. porphyropterus* Rüpp., and the longer-tailed form already bears Heuglin's name, *L. æneocephalus*. The latter was the species obtained by Mr. Witherby at Ed-Duem, on the White Nile.

† Breeding.

The measurements of the two species are as follows :—

<i>L. porphyropterus</i> Rüpp. [= <i>L. brevicaudus</i> Sharpe.]			<i>L. aeneocephalus</i> Heugl. [= <i>L. porphyropterus</i> Witherby (nec Rüpp.), Ibis, 1901, p. 249.]		
	Males.	Females.		Males.	Females.
	Tail.	Tail.		Tail.	Tail.
	in.	in.		in.	in.
Fashoda	6·1	5·3			
„	6·0	4·7	Anseba Valley..	8·35	7·8 †
„	5·8		„	7·9	
S. Abyssinia ..	6·1		„	7·8	
Shoa (<i>Rüppell</i>). .	5·75		Ed-Duem, White		
[Cotype of <i>L.</i> <i>porphyropterus</i> .]			Nile	8·0	6·87
Somaliland	5·9	4·9	„		6·75
Lake Baringo..	5·75				
Elgeyu	5·6				
[Type of <i>L. brevi-</i> <i>caudus</i> .]					
Lado †	5·9				

[This Purple-winged Glossy Starling was very common on Abba Island, and I saw it here and there further south.—R. M. H.]

5. *BUPHAGA ERYTHORHYNCHA.

Buphaga erythrorhyncha (Stanl.) ; Grant & Reid, p. 612.

[Only one small flock of the Red-billed Ox-pecker was seen, feeding on some buffalos near Kaka.—R. M. H.]

6. BUCHANGA ASSIMILIS.

Buchanga assimilis (Bechst.); Grant & Reid, p. 613.

Buchanga afra Witherby, p. 250.

a. ♂. Kaka, 15th March. No. 137.

b. ♂. Fashoda, 30th March. No. 252.

c, d. ♂ imm. 20 miles N. of Fashoda, 6th April. Nos. 294, 295.

e. ♂. 20 miles N. of Fashoda, 8th April. No. 307.

f. ♂. 20 miles N. of Fashoda, 13th April. No. 341.

g. ♀ §. 20 miles N. of Fashoda, 15th April. No. 362.

Iris crimson ; bill, legs, and feet black.

† Sexed female.

‡ Probably a male.

§ Breeding ; nest and eggs taken.

[The African Drongo is very common south of Kaka, but rare further north. Its song is very cheerful. It begins to sing just before daylight and does not cease till after sunset.

I took three nests with eggs in April. Two of them contained three eggs each, but those in the several nests were of a different colour. One clutch was pale terra-cotta, clouded with darker terra-cotta on the large end; another clutch was white, spotted with small purplish-brown spots.—R. M. H.]

7. STEGANURA PARADISEA.

Steganura paradisea (Linn.) ; Grant, Ibis, 1900, p. 123.

a. ♂ imm. (?). Kaka, 29th April. No. 409.

b, c. ♂ ♀ imm. (?). Ed-Duem, 23rd May. Nos. 563, 564. Iris hazel; bill and legs horn-coloured.

This species appears to breed throughout the year in the various parts of its wide range, for the British Museum Collection contains male birds in full breeding-dress shot in every month of the year except January and October, as will be seen from the following list :—

Rustenburg, Transvaal : 25th November.

Tati, Limpopo River : 30th April.

Nyasaland : February, May, June, July, August, September.

Somaliland : 2nd December.

Abyssinia : March, May.

Loando : July.

The males shot by Mr. Hawker, which are apparently immature birds, are in the garb of the female. All three specimens are in full moult, and the new flight-feathers as well as the middle tail-feathers have been renewed; the latter are not, however, longer than the outer pairs.

[The Paradise Whydah-Finch was not common. I never saw any with the long tail-feathers.—R. M. H.]

8. UROBRACHYA PHŒNICEA.

Urobrachya phœnicea (Heugl.) ; Sharpe, Cat. B. Brit. Mus. xiii. p. 225 (1890).

a. ♂. Fashoda, 22nd March. No. 165.

b. ♂. 20 miles N. of Fashoda, 12th April. No. 335.

c-g. ♂ ♀. Kaka, 2nd May. Nos. 420-424.

Iris hazel; bill horn-coloured; legs dusky.

All the specimens are adults in non-breeding plumage, and from the scarlet-orange colour of the shoulder-patch there appears to be little doubt that they belong to this species and not to *U. traversi* Salvad., which has the shoulder-patches yellowish orange.

[I never met with the Fire-shouldered Weaver-Finch north of Kaka. It went in flocks and fed on the recently-burnt ground near the river and the swamps.—R. M. H.]

9. PYROMELANA FRANCISCANA.

Pyromelana franciscana (Isert); Witherby, p. 247; Grant & Reid, p. 614; N. C. Roths. & Wollast. p. 11.

a. ♀. Fashoda, 1st April. No. 278.

Iris dark hazel; upper mandible dusky, lower pale horn-coloured; legs and feet dusky.

[The Orange Weaver-Finch was generally met with in flocks with other Weaver-birds.—R. M. H.]

10. PYROMELANA LADOENSIS.

Pyromelana ladoensis (Reichenow); Sharpe, Cat. B. Brit. Mus. xiii. p. 224 (1890).

a-d. ♂ ♀. Fashoda, 25th March to 1st April. Nos. 182, 184, 277, 279.

e. ♀. 20 miles N. of Fashoda, 13th April. No. 338.

Iris hazel; bill dusky, paler on lower mandible; legs and feet dusky. The males are still in winter plumage, shewing no trace of the yellow and black breeding-dress.

[The Lado Weaver-Finch was fairly common and was met with in flocks of *P. franciscana* and other allied species.—R. M. H.]

11. QUELEA ÆTHIOPICA.

Quelea æthiopica (Gray); Grant & Reid, p. 616.

a-c. ♀. Fashoda, 25th and 26th March. Nos. 180, 204, 210.

d, e. ♂ ♀. 20 miles N. of Fashoda, 13th April. Nos. 336, 337.

Iris hazel; bill pink; legs and feet horn-coloured. All five specimens are in winter plumage.

[The Ethiopian Red-billed Weaver-Finch is very common south of Kaka and goes in flocks along with *Hyphantornis taniopterus*.—R. M. H.]

12. *LAGONOSTICTA BRUNNEICEPS*.

Lagonosticta brunneiceps Sharpe; Grant, Ibis, 1901, p. 617.

a. ♀. Goz-Abu-Gumar, 16th May. No. 477.

b, c. ♂ imm. et ♀. Ed-Duem, 22nd May. Nos. 539, 540.

Iris crimson; bill crimson, ridge of culmen and suture of lower mandible black; legs flesh-coloured.

[The Brown-capped Fire-Finch was not common; I never noticed it south of Goz-Abu-Gumar.—R. M. H.]

13. *PYTELIA SOUDANENSIS*.

Zonogastris soudanensis Sharpe; Sharpe, Cat. B. Brit. Mus. xiii. p. 298 (1890).

a. ♀. Ed-Duem, 22nd May. No. 541.

Iris light reddish brown; bill flesh-coloured, darker at tip; legs and feet flesh-coloured.

It is difficult to be certain that this identification is correct. Both *Pytelia soudanensis* (Sharpe) and the allied *P. citerior* Strickl. occur in the White Nile Valley, and the females are apparently almost identical in appearance: possibly that of *P. citerior* has the sides and flanks more heavily barred.

[The Red-faced Finch was only met with on a few occasions in the neighbourhood of Ed-Duem.—R. M. H.]

14. *SPORÆGINTHUS SUBFLAVUS*.

Sporæginthus subflavus (Vieill.); Grant, Ibis, 1900, p. 130.

a. ♀. 20 miles N. of Fashoda, 19th Mar. No. 146.

b, c. ♂ ♀. Fashoda, 26th Mar. Nos. 206, 207.

d-q. ♂ ♀ ad. et imm. Fashoda, 28th Mar. Nos. 215-227.

r. ? 20 miles N. of Fashoda, 13th April. No. 340.

s-u. ♂ imm. et ? ♀. Kaka, 6th May. Nos. 439-441.

Iris crimson; sides of bill crimson, black along the culmen; legs flesh-coloured.

[The Sanguineous Waxbill occurs in small flocks; I never noticed it north of Kaka.—R. M. H.]

15. *ÆDEMOSYNE CANTANS*.

Ædemosyne cantans (Gmel.); Witherby, p. 247; Grant & Reid, p. 618; N. C. Roths. & Wollast. p. 11.

a. Ad. Kaka, 28th February. No. 90.

Iris brown; bill lead-blue; legs horn-coloured.

[The African Silver-bill is common. I found a nest with young birds in it in March.—R. M. H.]

16. *ESTRILDA CINEREA*.

Estrilda cinerea (Vieill.); Sharpe, Cat. B. Brit. Mus. xiii. p. 394 (1890).

a. ♂. Fashoda, 29th March. No. 228.

b-d. ♂ ♀. Fashoda, 2nd April. Nos. 280–282.

Iris and bill crimson; legs dusky.

[The Grey Amaduvade is not very common.—R. M. H.]

17. *ESTRILDA PHÆNICOTIS*.

Estrilda phænicotis Swains.; Witherby, p. 248; Grant & Reid, p. 619.

a. ♂. Jebel Ahmed-Agha, 19th February. No. 61.

b. ? . Kaka, 28th February. No. 86.

c. ♀. 20 miles N. of Fashoda, 12th April. No. 327.

Iris hazel; bill pink, dusky at tip; legs horn-coloured.

[The Crimson-cared Waxbill or Cordon Bleu is very common and is one of the few tame Sudan Finches.—R. M. H.]

18. *SITAGRA LUTEOLA*.

Sitagra luteola (Licht.); Sharpe, Cat. B. Brit. Mus. xiii. p. 425 (1890); Witherby, p. 248.

a. ♀ imm. Fashoda, 29th March. No. 240.

b. ♂ imm. Kaka, 23rd April. No. 397.

c. ♂. Goz-Abu-Gumar, 18th May. No. 512.

Iris hazel; bill dusky, under mandible lighter.

The adult male, specimen *c*, of the Black-capped Weaver-Finch is out of plumage and is in the dress of an adult female.

19. *HYPHANTORNIS TENIOPTERUS*.

Hyphantornis teniopterus Reichenb.; Sharpe, Cat. B. Brit. Mus. xiii. p. 467 (1890).

a. ♂. Jebel Ahmed-Agha, 19th Feb. No. 60.

b-d. ♂. Kaka, 26th to 28th Feb. Nos. 76, 76 *a*, 77.

e, f. ♂ ♀. Kaka, 5th & 15th Mar. Nos. 112, 134.

g-n. ♂ ♀ et ♂ imm. Fashoda, 26th Mar. to 2nd April. Nos. 186, 211-213, 229, 243, 291.

o. ♂. 20 miles N. of Fashoda, 6th April. No. 299.

Iris pale straw-coloured granulated with black; upper mandible dusky, lower white, dusky along upper edges; legs and feet pinkish horn-coloured.

All the specimens of Reichenbach's Weaver-Finch collected by Mr. Hawker are out of plumage. His birds were obtained between the 19th of February and the 6th of April and none shew any trace of assuming the breeding-plumage. The immature males apparently differ in having the buff on the under parts of a more decided tint than the adults and the wing varies from 2·55-2·6 inches, whereas in the adult male it measures 2·75-2·8. The female has the wing 2·5.

In a small collection made by Capt. H. N. Dunn in the month of May at the mouth of the Zeraf River there are four males in various interesting stages of transitional plumage—the most backward shewing only a few feathers of the breeding-plumage, while in the most advanced it is almost complete. A male procured by Emin Pasha at Lado on the 6th of May, and very similar to the last named, is in almost full breeding-dress, but still retains one or two feathers of the undress plumage; a second male obtained by him at Bor on the 10th of July is in full plumage.

It is thus clear that the breeding-plumage is *annually* assumed in the month of May.

[Reichenbach's Weaver-Finch goes about in enormous flocks, which appear to be kept continually on the move by Hawks, and prove a great nuisance to the naturalist. Nearly every bush seems to be full of them, and when they fly off they generally frighten every other species of small bird that happens to be near, thus making collecting very difficult.

I never saw any individuals in breeding-plumage, though I must have seen many millions.—R. M. H.]

20. PASSER DIFFUSUS.

Passer diffusus (Smith) ; Sharpe, Cat. B. Brit. Mus. xii. p. 336 (1888) ; Witherby, p. 246.

a. ♀. 20 miles N. of Fashoda, 11th April. No. 322.

Iris brown ; bill dusky, paler on under mandible ; legs and feet dusky.

This southern form, characterized by the white spot on the throat, has also been obtained in Somaliland.

[I only saw a few examples of the Southern Grey-headed Sparrow.—R. M. H.]

21. PASSER LUTEUS.

Passer luteus (Licht.) ; Sharpe, Cat. B. Brit. Mus. xii. p. 340 (1888) ; Witherby, p. 247 ; N. C. Roths. & Wollast. p. 10.

a-h. ♂ ♀ et ♂ imm. Ed-Duem, 22nd to 23rd May. Nos. 546-551 & 560, 561.

Iris light brown ; bill, legs, and feet horn-coloured.

The series includes several immature males in various stages of plumage : some with the throat, chest, and eyebrow-stripe yellow, the rest of the under parts whitish, and the forehead and crown pale brown ; others in plumage similar to that of the female.

[The Yellow-breasted Sparrow was common about Ed-Duem, and was generally seen in small flocks.—R. M. H.]

22. SERINUS LEUCOPYGIUS.

Serinus leucopygius (Sundev.) ; Sharpe, Cat. B. Brit. Mus. xii. p. 366 (1888) ; Witherby, p. 247.

a, b. ♀. Fashoda, 26th & 30th Mar. Nos. 187 & 250.

Iris hazel ; bill dusky ; legs horn-coloured.

The female scarcely differs from the male in plumage, the breast is perhaps slightly more spotted.

[The White-rumped Serin-Finch is not very common. It generally goes in small flocks, and its white rump makes it conspicuous among the other Finches.—R. M. H.]

23. EMBERIZA CÆSIA.

Emberiza cæsia Cretzschm. ; Sharpe, Cat. B. Brit. Mus. xii. p. 35 (1888) ; N. C. Roths. & Wollast. p. 9.

a-c. ♂ ♀. Khartum, 25th Jan. Nos. 19-21.

Iris hazel ; bill horn-coloured ; legs and feet fleshy horn-coloured.

[I only saw Cretzschmar's Bunting near Khartum.—R. M. H.]

24. *MELANOCORYPHA BIMACULATA*.

Melanocorypha bimaculata (Ménétr.) ; Sharpe, Cat. B. Brit. Mus. xiii. p. 555 (1890).

a-c. ♂ ♀. Wad Shalai, 5th Feb. Nos. 42-44.

Iris hazel ; bill horn-coloured, dark above and at tip of lower mandible ; legs and feet fleshy horn-coloured.

[I only saw one flock of Double-spotted Calandra Larks ; they were on their way to water.—R. M. H.]

25. *MIRAFRA ERYTHROPYGIA*.

Mirafra erythropygia (Strickl.) ; Sharpe, Cat. B. Brit. Mus. xiii. p. 619 (1890) ; Alexander, Ibis, 1902, p. 292.

a. ♂. Renk, 10th May. No. 462.

Iris hazel ; bill dusky, paler at base below ; legs and feet pale horn-coloured.

This very rare Lark is only represented in the British Museum Collection by two specimens, one of which has been recently forwarded from the Zeraf by Capt. H. Dunn. The specimen before us is in worn plumage and is just commencing to moult its flight-feathers, the innermost primary and outermost secondary quills being partially grown on either side. Capt. Boyd Alexander was fortunate in procuring a number of these Larks in the Gold Coast Colony.

[I only saw one scattered flock of Rufous-rumped Bush-Larks. They were very wild and perched on the tops of trees and bushes, so that I had great difficulty in procuring a specimen.—R. M. H.]

26. *MIRAFRA ALBICAUDA*.

Mirafra albicauda Reichenow, J. f. O. 1891, p. 223 ; id. Vög. Deutsch-Ost-Afr. p. 203 (1894).

a-g. ♂ ♀. 20 miles N. of Fashoda, 12th April. Nos. 328-334 †.

h. ♀. Kaka, 2nd May. No. 425.

Iris hazel ; bill dusky, pale below ; legs horn-coloured.

† Nos. 328, 331, 332 are said to have been breeding birds.

The examples in the fine series of this Lark obtained by Mr. Hawker appear to agree with Dr. Reichenow's description, and the species is certainly identical with the birds obtained by Lord Delamere in British East Africa and identified by Dr. Sharpe as *M. albicauda*. It is new to the British Museum Collection. We may mention that the amount of white in the outer tail-feathers varies: in some examples, as in the type, the *two* outer pairs are mostly white, and the fourth pair have the outer web margined with white; in others only the outer pair of feathers are white and the fifth pair have the outer web mostly white, while in the fourth it is only margined with white.

[We only noticed the White-tailed Bush-Lark between Fashoda and Kaka.—R. M. H.]

27. *GALERIDA CRISTATA*.

Galerida cristata (Linn.); Grant & Reid, p. 629; N. C. Roths. & Wollast. p. 6.

Galerida flava Brehm; Witherby, p. 244.

a, b. ♂. Khartum, 23rd–25th Jan. Nos. 1 & 7.

Iris hazel; bill horn-coloured; legs and feet whitish flesh-coloured.

The skins before us belong to the pale form known as *G. flava*.

[Common around Khartum.—R. M. H.]

28. *PYRRHULAUDA LEUCOTIS*.

Pyrrhulauda leucotis (Stanl.); Witherby, p. 245; Grant & Reid, p. 629; Grant, Bull. B. O. C. xii. no. lxxxii. p. 14 (1901).

a, b. ♂ et ♀ [♂ imm.]. 20 miles N. of Fashoda, 19th March. Nos. 148 & 149.

c. ♂ imm. 20 miles N. of Fashoda, 12th April. No. 326.

Iris dark brown; bill and legs pale horn-coloured.

This form is scarcely separable from *P. smithi*, of South-Africa, which has the bill slightly larger, but is in other respects similar.

[I saw a great many examples of the Black-shouldered Finch-Lark. They generally came to the river to drink

between 8 and 12 o'clock in the forenoon in small scattered flocks or families.—R. M. H.]

29. *PYRRHULAUDA MELANOCEPHALA*.

Alda melanocephala Licht. Verz. Doubl. p. 28 (1823).

Fringilla otoleucus Temm. Pl. Col. iii. pl. 269. figs. 2, 3 (1824).

Pyrrhulauda melanocephala Grant, Bull. B. O. C. xii. no. lxxxii. p. 14 (1901); N. C. Roths. & Wollast. p. 8.

a-c. ♂ et ♂ imm. Khartum, 25th Jan. Nos. 16-18.

Iris dark brown; bill, legs, and feet pale horn-coloured.

One of the most interesting points established by the present expedition was the existence of two closely allied, but perfectly distinct, species—*Pyrrhulauda leucotis* (Stanl.) and *P. melanocephala* (Licht.)—in the valley of the White Nile. Owing to want of material these two forms had been united in the 'Catalogue of Birds' (*cf.* vol. xiii. p. 637).

The differences between the males of the two species may be tabulated as follows:—

<i>P. leucotis.</i>	<i>P. melanocephala.</i>
Bill dusky.	Bill white.
White band across nape narrow, 0·1 inch.	White band across nape wide, 0·25 inch.
Chestnut of upper parts dark.	Chestnut of upper parts paler.
Lesser wing-coverts black.	Lesser wing-coverts white.

Through the kindness of Dr. Reichenow I have ascertained that the type of *Alda melanocephala* Licht. is identical with *Fringilla otoleucus* Temm.

This species appears to be the western representative, extending to Senegal; the true *P. leucotis* being confined to the countries east of the White Nile, where the ranges of the two species overlap.

[The White-shouldered Finch-Lark is fairly common near Khartum. It generally frequents the paths and feeds on the grain which falls from loads. When disturbed it flies a short way and then crouches close to the ground.—R. M. H.]

30. *MOTACILLA FLAVA*.

Motacilla flava Linn.; Witherby, p. 244; Grant & Reid, p. 631; N. C. Roths. & Wollast. p. 5.

a. ♂. 20 miles N. of Fashoda, 19th Mar. No. 144.

b. ♂. Fashoda, 26th Mar. No. 208.

Iris hazel; bill and legs black.

[The Blue-headed Yellow Wagtail was fairly common along the White Nile at Fashoda.—R. M. H.]

31. MOTACILLA CAMPESTRIS.

Motacilla campestris Pall.; Grant, Ibis, 1900, p. 140.

a. ♀ imm. Khartum, 25th Jan. No. 12.

Iris brown; bill and legs black.

An immature example of Ray's Wagtail.

32. MOTACILLA FELDEGGI.

Motacilla feldeggii Michah.; Grant & Reid, p. 631.

a. ♂. Khartum, 25th Jan. No. 13.

b, c, d. ♂. Fashoda, 26th & 30th Mar. Nos. 201 & 202, 246.

Iris hazel; bill, legs, and feet dusky.

[We found the Black-headed Wagtail fairly common near Fashoda in company with *M. flava*.—R. M. H.]

33. ANTHUS RICHARDI.

Anthus richardi Vieill.; Sharpe, Cat. B. Brit. Mus. x. p. 564 (1885).

a, b. ♀. Goz-Abu-Gumar, 18th May. Nos. 508, 509.

Iris hazel; bill dusky, paler below; legs flesh-coloured.

The occurrence of Richard's Pipit in the Sudan is interesting, though it was to be expected that it would be found there sooner or later, as it had already been recorded by Loche from Algeria, by Zander (J. f. O. 1853, Bericht, p. 61) from N. Africa, and by Brehm (J. f. O. 1855, p. 366) from E. Africa.

[I found this Pipit feeding on the bean-fields near Goz-Abu-Gumar.—R. M. H.]

34. ANTHUS CERVINUS.

Anthus cervinus (Pall.); Witherby, p. 244; Grant & Reid, p. 633; N. C. Roths. & Wollast. p. 6.

a. ♂. Khartum, 25th Jan. No. 11.

b. ♂. Fashoda, 1st April. No. 276.

a (in winter plumage). Iris hazel; upper mandible

dark horn-coloured, lower lighter at base; legs light horn-coloured.

b (in summer plumage). Iris brown; bill and legs horn-coloured.

[I only noticed one Red-throated Pipit south of Khartum.—R. M. H.]

35. *NECTARINIA PULCHELLA*.

Nectarinia pulchella (Linn.); Witherby, p. 243; Grant & Reid, p. 634.

a. ? ♀. Kaka, 17th April. No. 378.

b-l. ♂ ♀ et imm. Renk, 9th May. Nos. 449-458.

m, n. ♂. Goz-Abu-Gumar, 17th May. Nos. 497 & 499.

♂. Iris hazel; bill and legs black.

♀. Iris hazel; bill dusky, lighter towards base.

The series collected shews the male in every stage of plumage, from quite young to fully adult.

[I found the males of the Beautiful Sunbird in flocks where the Mimosa was flowering. The females were rather rare. I never noticed the species north of Goz-Abu-Gumar.—R. M. H.]

36. *NECTARINIA METALLICA*.

Nectarinia metallica Licht.; Witherby, p. 242; Grant & Reid, p. 634; N. C. Roths. & Wollast. p. 4.

a-c. ♂ ad. et imm. Jebel Auli, 4th Feb. Nos. 37-39.

d. ♀. Goz-Abu-Gumar, 17th May. No. 490.

♂. Iris light brown; bill and legs black.

♀. Iris hazel; bill black, light at base of lower mandible; legs and feet black.

[I never saw the Blue-collared Long-tailed Sunbird south of Jebel Auli.—R. M. H.]

37. *ÆGITHALUS PUNCTIFRONS*.

Ægithalus punctifrons Sundev. Cefvers. Vet.-Akad. 1850, p. 129; Witherby, p. 243; N. C. Roths. & Wollast. p. 5.

a. ♂. Jebel Ahmed-Agha, 19th Feb. No. 63.

b. ♀. Goz-Abu-Gumar, 17th May. No. 491.

Iris light hazel; bill dusky; legs and feet bluish ash.

[We did not find the Nubian Penduline Titmouse common. It seems to have the habits of an *Acanthiza*.—R. M. H.]

38. *TELOPHONUS REMIGIALIS*.

Telephonus remigialis Finsch & Hartl.; Gadow, Cat. B. Brit. Mus. viii. p. 128 (1883); Witherby, p. 252; N. C. Roths. & Wollast. p. 14.

a-d. ♂. Kaka, 28th Feb.-5th Mar. Nos. 78, 94, 95, 107.

e. ♀. Fashoda, 1st April. No. 271.

f. ? 20 miles N. of Fashoda, 8th April. No. 310.

g, h. ♀. Kaka, 29th April, 6th May. Nos. 411, 438.

Iris bluish grey; bill dark horn-coloured, whitish at base of the lower mandible, or entirely black; legs ashen green.

[Hartlaub's Red-winged Bush-Shrike is fairly common between Kaka and Fashoda, and is generally to be found in pairs. It frequents low scrub and is rather shy.—R. M. H.]

39. *LANIARIUS ERYTHROGASTER*.

Laniarius erythrogaster (Cretzschm.); Grant, Ibis, 1900, p. 148; Witherby, p. 252.

a, b. ♀. Kaka, 23rd-28th Feb. Nos. 65 & 84.

c-e. ♂ et ♂ imm. 20 miles N. of Fashoda, 8th-15th April. Nos. 306, 317, 360.

f. ♀ imm. Goz-Abu-Gumar, 16th May. No. 475.

Iris pale straw-coloured; bill and legs black.

Immature birds have the greater wing-coverts spotted with buff at the tip, the black feathers of the crown mixed with cinnamon, and those of the under parts indistinctly barred with pale buff.

[This Scarlet-bellied Bush-Shrike is common. The male has a peculiar whistle, the last note of which is blended with the hoarse cry of the female. Its demeanour reminded me of *Colluriocincla harmonica* of Australia.—R. M. H.]

40. *NILAUS AFER*.

Nilaus afer (Lath.); Witherby, p. 251; Grant & Reid, p. 641.

a. ♂. Fashoda, 21st March. No. 162.

b, c. ♂. Fashoda, 29th-31st March. Nos. 233, 264.

d, e. ♂. Kaka, 21st-22nd April. Nos. 382, 386.

Iris hazel; bill and legs black.

[The Abyssinian Bush-Shrike is fairly common, and is generally found singly or in pairs. It has a peculiar low whistle, which can be heard at some distance.—R. M. H.]

41. LANIUS EXCUBITORIUS.

Lanius excubitorius Des Murs ; Grant & Reid, p. 641.

a. ♂. Kaka, 5th March. No. 108.

b, c. ♂ ♀. Fashoda, 26th March. Nos. 191, 192.

d, e. ♂. 20 miles N. of Fashoda, 8th–11th April. Nos. 304, 311 †.

f, g. ♀. Kaka, 1st and 7th May. Nos. 415 †, 442.

Iris dark hazel ; bill and legs black.

[I met with the Long-tailed Grey-backed Shrike in flocks of from five to seven individuals, but it was not at all common. I also found its nest, containing four eggs, in a bare thorn-bush. The eggs of this species are new to the British Museum Collection.—R. M. H.]

42. LANIUS ISABELLINUS.

Lanius isabellinus Hempr. & Ehr. ; Witherby, p. 251 ; Grant & Reid, p. 641 ; N. C. Roths. & Wollast. p. 13.

a. ♀. 20 miles N. of Fashoda, 11th April. No. 323.

Iris hazel ; bill horn-coloured ; legs dusky.

[I saw very few examples of the Isabelline Shrike and was only able to procure one.—R. M. H.]

43. LANIUS PARADOXUS.

Lanius paradoxus Brehm, Vogelfang, p. 84 (1855).

Lanius senator Witherby, p. 250.

a-c. ♂ ♀. Fashoda, 30th March–1st April. Nos. 251, 272, 273.

Iris dark hazel ; bill black, bluish at base ; legs dusky.

The three birds collected by Mr. Hawker belong to the form having the basal part of the middle pair of tail-feathers white.

[I only noticed Brehm's Woodchat-Shrike between Fashoda and Kaka.—R. M. H.]

44. *LANIUS NUBICUS*.

Lanius nubicus Licht. ; Grant, Ibis, 1900, p. 149 ; Witherby, p. 250 ; N. C. Roths. & Wollast. p. 13.

a, b. ♂. Kaka, 28th Feb. Nos. 80, 81.

c. ♂. 20 miles N. of Fashoda, 8th April. No. 305.

d. ♂†. 20 miles N. of Fashoda, 13th April. No. 342.

e. ♂ imm. Ed-Duem, 23rd May. No. 566.

Iris hazel ; bill bluish black, lighter below ; legs black.

[The Nubian Shrike was not common.—R. M. H.]

45. *BRADYORNIS PALLIDUS*.

Bradyornis pallidus (Müll.) ; Grant, Ibis, 1900, p. 150.

a. ♀ ad. Kaka, 13th March. No. 132.

b. ♂ ad. 20 miles N. of Fashoda, 19th March. No. 151.

c. ♂ ad.† Kaka, 29th April. No. 410.

Iris hazel ; bill, legs, and feet black.

These birds belong to the smaller race of *B. pallidus* which has been called *B. subalaris* Sharpe.

a. ♀. Wing 3·15 inches ; tail 2·7.

b, c. ♂. Wing 3·3–3·4 inches ; tail 2·8–3·0.

[I did not notice the Pale Robin-Shrike north of Jebel Ahmed-Agha. It carries itself very much like the English Robin.—R. M. H.]

46. *PHYLLOSCOPUS RUFUS*.

Phylloscopus rufus (Bechst.) ; Witherby, p. 257 ; Grant & Reid, p. 644.

a. ♂. Wad Shalai, 5th Feb. No. 47.

Iris hazel ; bill and legs horn-coloured.

The Chiffchaff was rarely met with. Mr. Witherby, moreover, only came across it once.

47. *SYLVIA CURRUCA*.

Sylvia curruca (Linn.) ; Witherby, p. 258 ; Grant & Reid, p. 645.

a. ♂. Wad Shalai, 5th Feb. No. 45.

Iris pale brown ; bill and legs black.

[The Lesser Whitethroat was not common.—R. M. H.]

† Breeding.

48. SYLVIA ORPHEA.

Sylvia orphea Temm. ; Seebohm, Cat. B. Brit. Mus. v. p. 14 (1881) ; N. C. Roths. & Wollast. p. 17.

a. ♂. Jebel Auli, 4th Feb. No. 33.

Iris pale brown ; bill and legs black.

[I only noticed a single specimen of the Orphean Warbler.—R. M. H.]

49. HYPOLAIS PALLIDA.

Hypolais pallida (Hempr. & Ehr.) ; Witherby, p. 257 ; Grant & Reid, p. 647 ; N. C. Roths. & Wollast. p. 17.

a. ♀. Jebel Auli, 4th Feb. No. 35.

b. ♂. Wad Shalai, 5th Feb. No. 46.

c. ♂. 20 miles N. of Fashoda, 11th April. No. 319.

d. ♂. Kaka, 24th April. No. 400.

Iris brown ; bill horn-coloured ; legs and feet dusky or olivaceous.

[I shot the Olivaceous Warbler while it was feeding on insects attracted by the Mimosa flowers.—R. M. H.]

50. SYLVIELLA BRACHYURA.

Sylviella brachyura Lafr. ; Grant, Ibis, 1900, p. 155 ; Witherby, p. 255.

a-c. ♂ ♀. Fashoda, 25th-26th March. Nos. 181, 198, 199.

d. ♀. 20 miles N. of Fashoda, 16th April. No. 364.

e. ♂. Kaka, 17th April. No. 377 †.

f, g. ♂. Ed-Duem, 22nd May. Nos. 552, 553.

Iris light brown ; bill, legs, and feet horn-coloured.

[The habits of the Cinnamon-throated Bush-Warbler are very much like those of the Nuthatch. It is a fairly common bird.—R. M. H.]

51. EREMOMELA GRISEOFLOVA.

Eremomela griseoflova Sharpe, Cat. B. Brit. Mus. vii. p. 160 (1883) ; Witherby, p. 254.

a. ♂ †. Jebel Auli, 4th Feb. No. 36.

Iris hazel ; bill and legs dusky.

† Breeding.

The Grey-and-Yellow Bush-Warbler, so far as we are aware, has hitherto been met with only in Bogosland.

52. CAMAROPTERA BREVICAUDATA.

Sylvia brevicaudata Cretzschm. in Rüpp. Atl. Vög. p. 53, pl. 35 b (1826).

Camaroptera brevicauda Sharpe, Cat. B. Brit. Mus. vii. p. 168 (1883) [part.]; Witherby, p. 254.

a-c. ♂ ♀. Kaka, 8th–12th March. Nos. 128–130.

d, e. ♀. 20 miles N. of Fashoda, 13th and 16th April. Nos. 339, 363.

Iris light brown or hazel; bill dusky, lighter on lower mandible; legs and feet horn-coloured.

As already pointed out [Ibis, 1901, p. 648], these specimens represent the true *C. brevicaudata* (Cretzschm.), a name which has been misapplied to the species ranging through Somaliland, Abyssinia, and thence to West Africa. The latter species, which should be known as *C. chrysocnemis* (Licht.), has the throat, breast, sides, and flanks grey. In the birds before us from the White Nile, the throat and rest of the under parts are white, tinged with buff on the sides and flanks. Mr. Witherby noticed that the birds which he obtained were very light-coloured on the breast and throat, but attributed the difference to age.

[This Green-backed Bush-Warbler reminds one of a Hedge-Sparrow in its habits. It comes round the camp and climbs about the zariba catching insects. It is very inquisitive and takes great interest in anything going on. It has a feeble song.—R. M. H.]

53. SPILOPTILA CLAMANS.

Spiloptila clamans (Temm.); Sharpe, Cat. B. Brit. Mus. vii. p. 231 (1883); Witherby, p. 255; N. C. Roths. & Wollast. p. 15.

a, b. ♂ † ♀. Khartum, 25th Jan. Nos. 14 & 15.

c. ♂. Ed-Duem. 22nd May. No. 545.

Iris light brown or pale yellow; bill dusky, lower mandible light at base; legs and feet pale horn-coloured.

† Breeding.

[Temminck's Bush-Warbler was not seen south of Ed-Duem. It inhabits low bushes and is very shy. It has a pretty little song, which it delivers from the top boughs. When approached it dives into a bush and when pursued seems to prefer running to flying.—R. M. H.]

54. PHYLLOLAIS PULCHELLA.

Phyllolais pulchella Sharpe, Cat. B. Brit. Mus. vii. p. 149 (1883).

a. ♂. Jebel Ahmed-Agha, 19th Feb. No. 62.

b. ? Kaka, 8th Mar. No. 126.

c. ♂. Fashoda, 29th Mar. No. 232.

d, e. ♂. 20 miles N. of Fashoda, 11th April. Nos. 315 & 316.

f. ♀. Goz-Abu-Gumar, 17th May. No. 492.

Iris light brown; bill and legs horn- or flesh-coloured.

[The Beautiful Bush-Warbler is very common everywhere south of Abba Island. It has a pleasant song.—R. M. H.]

55. PRINIA MURINA.

Prinia murina (Heugl.); Grant & Reid, p. 650.

a. Ad. Kaka, 28th Feb. No. 87.

b-d. ♂ et ad. Kaka, 2nd & 15th March. Nos. 99, 140, 141.

Iris light brown; bill and legs horn-coloured.

[The Tawny-flanked Grass-Warbler is extremely common. It is very tame and inquisitive and always comes round a camp to see what is going on. It has a great variety of call-notes and can sing sweetly.—R. M. H.]

56. CISTICOLA RUFICEPS.

Cisticola ruficeps (Cretzschm.); Sharpe, Cat. B. Brit. Mus. vii. p. 282 (1883).

a-c. ♂. Kaka, 28th Feb.-2nd Mar. Nos. 91-93.

d. ♂. Fashoda, 26th Mar. No. 196.

Iris light brown; bill dusky; legs horn-coloured.

Specimen b [♂, 2nd Mar.] has the whole forehead and crown dull chestnut; a and c [♂, 28th Feb. and 2nd Mar.] have the forehead dull chestnut, the crown and back of the head widely streaked with dusky; d [♂, 26th Mar.] has the

forehead and crown dull rusty red strongly streaked with black. This rare species was represented in the British Museum by only a single example from Southern Nubia.

[The Red-capped Fantail-Warbler was fairly common about Fashoda. I found some of these birds quite two miles from the river. They are much less shy than other grass-birds and, when disturbed, fly up into bushes instead of hiding in the herbage.—R. M. H.]

57. *CISTICOLA MARGINALIS*.

Cisticola marginalis (Heugl.); Sharpe, Cat. B. Brit. Mus. vii. p. 258 (1883); Grant & Reid, pp. 652, 653.

a. ♂. Kaka, 8th Mar. No. 125.

b-f. ♂ ♀. Fashoda, 26th–29th Mar. Nos. 197, 205, 209, 238, 239.

Iris light brown; bill dusky; legs horn-coloured.

As already pointed out (*cf.* Ibis, 1901, pp. 652, 653), this species, which appears to be confined to the Valley of the White Nile, may be at once distinguished from *C. erythrogenys* Heugl. by having the upper tail-coverts buff, with rarely a trace of black spots on one or two of the feathers. This species is new to our collection.

[We found Heuglin's Grass-Warbler fairly common along the banks of the White Nile near Fashoda. It is very shy and takes cover in the grass when disturbed.—R. M. H.]

58. *RUTICILLA PHÆNICURA*.

Ruticilla phœnicura (Linn.); Grant, Ibis, 1900, p. 164; Witherby, p. 258.

a. ♂. 20 miles N. of Fashoda, 11th April. No. 318.

Bill, legs, and feet black.

[The Redstart was not common and appeared to be very shy.—R. M. H.]

59. *SAXICOLA MELANOLEUCA*.

Saxicola melanoleuca (Güld.); Seebohm, Cat. B. Brit. Mus. v. p. 385 (1881); Witherby, p. 259; N. C. Roths. & Wollast. p. 18.

a. ♂. Jebel Auli, 4th Feb. No. 32.

Iris hazel; bill and legs black.

A male of the Eastern form of the Black-throated Chat is in nearly full breeding-plumage. Mr. Witherby met with it even further south at Shebesha.

60. *SAXICOLA CENANTHE*.

Saxicola cenanthe (Linn.); Grant & Reid, p. 658; N. C. Roths. & Wollast. p. 18.

a-g. ♂ ♀. Fashoda, 22nd Mar.—2nd April. Nos. 164, 195, 203, 244, 245, 270, 284.

h. ♀. 20 miles N. of Fashoda, 11th April. No. 324.

Iris hazel; bill and legs black.

[The Wheatear was common, but very wild.—R. M. H.]

61. *SAXICOLA ISABELLINA*.

Saxicola isabellina Cretzschm.; Grant & Reid, p. 658; N. C. Roths. & Wollast. p. 18.

a. ♂. Khartum, 25th Jan. No. 9.

Iris dark hazel; bill and legs black.

[The Isabelline Chat appears to be a scarce bird.—R. M. H.]

62. *SAXICOLA DESERTI*.

Saxicola deserti (Temm.); Grant & Reid, p. 658; N. C. Roths. & Wollast. p. 18.

a. ♂. Khartum, 25th Jan. No. 10.

b. ♀. Omdurman, 2nd Feb. No. 24.

Iris dark hazel; bill and legs black.

An adult pair of the Desert Chat in nearly full breeding-plumage.

63. *SAXICOLA HEUGLINI*.

Saxicola heuglini Finsch & Hartl.; Heugl. Orn. N.O.-Afr. i. p. 346 (1874).

Saxicola bottæ Seebohm, Cat. B. Brit. Mus. v. p. 401 [part. spec. *g*] (1881).

a. ♂ †. 20 miles N. of Fashoda. 11th April. No. 325.

b-e. ♂ ♀. Kaka, 1st–6th May. Nos. 417–419, 437.

Iris hazel; bill and legs black.

Seebohm was evidently in error when he united this form with the much larger and more brightly coloured *S. bottæ* Bonap. The present species may at once be dis-

† Breeding.

tinguished by the rufous-buff margins to the greater wing-coverts, the much less extensive white patch on the throat, and the more dusky breast and under parts. At first sight the rufous-margined wing-coverts might be mistaken for immature plumage, but this is not the case.

Specimen *a*, a breeding male shot on the 11th of April, and specimen *c*, a male shot on the 1st of May, have the plumage of the upper parts, wings, and tail uniform dark brown and extremely worn. They are just commencing to moult; a few dark brown rufous-margined wing-coverts and one or two of the secondary quills are partially grown. Specimen *e*, which was shot on the 6th of May, and specimens *b* and *d*, females, shot on the 1st of May, have already assumed a considerable amount of new plumage, the rufous-edged wing-coverts and innermost secondaries being already full-grown; moreover, specimen *b* has already moulted most of its tail, the new feathers having the basal half white and the terminal half black narrowly tipped with white.

Male. Wing 3·4 inches; tail 2·1–2·3; tarsus 1·1–1·2.

Female. Wing 3·25–3 inches; tail 2·05–2·2; tarsus 1·05.

[Heuglin's Chat kept principally on the burnt land. It was not wild like the other species.—R. M. H.]

64. CERCOTRICHAS PODOBE.

Cercotrichas podobe (Müll.); Witherby, p. 256; Grant & Reid, p. 661; N. C. Roths. & Wollast, p. 17.

a. ♂. Jebel Auli, 4th Feb. No. 34.

b. ♂ imm. Renk, 10th May. No. 465.

c. ♂. Goz-Abu-Gumar, 17th May. No. 487.

Iris light hazel; bill, legs, and feet black.

[The Black Bush-Robin was generally seen in pairs. It is a very shy bird, keeping to the low bushes and running far if winged.—R. M. H.]

65. CRATEROPUS LEUCOCEPHALUS.

Crateropus leucocephalus (Cretzschm.); Grant, Ibis, 1900, p. 171; Witherby, p. 253.

a, b. ♂ ♀. Goz-Abu-Gumar, 17th May. Nos. 485 & 486.

c. ♀. Ed-Duem, 22nd May. No. 556.

Iris yellow; bill black; legs and feet dusky.

[The White-headed Babbling-Thrush is found in companies and is a very noisy bird. It was not seen south of Goz-Abu-Gumar.—R. M. H.]

66. PYCNONOTUS ARSINOE.

Pycnonotus arsinoe (Hempr. & Ehr.); Witherby, p. 253; Grant & Reid, p. 662; N. C. Roths. & Wollast. p. 15.

a. ♂. 20 miles N. of Fashoda, 11th April. No. 321.

b. ♂. Kaka, 23rd April. No. 395.

c. ♀. Renk, 10th May. No. 464.

Iris pale brown; bill black; legs and feet black.

[The White-vented Bulbul was very common.—R. M. H.]

67. MUSCICAPA GRISOLA.

Muscicapa grisola Linn.; Grant & Reid, p. 173.

a, b, ♀. Kaka. 22nd & 30th April. Nos. 385, 413.

Iris hazel; bill black; legs and feet black.

[The Spotted Flycatcher was met with only at Kaka.—R. M. H.]

68. BATIS ORIENTALIS.

Batis orientalis (Heugl.); Grant & Reid, p. 662.

a. ♂ imm. Kaka, 28th Feb. No. 82.

b. ♀ †. Kaka, 28th Feb. No. 83.

c, d. ♂ † ♀ †. Fashoda, 21st March. Nos. 160, 161.

e. ♀. Fashoda, 30th March. No. 248.

f-h. ♂ ♀ ad. Fashoda, 2nd April. Nos. 286, 287, 288.

Iris bright yellow; bill, legs, and feet black.

[The Abyssinian White-flanked Flycatcher was fairly common south of Jebel Ahmed-Agha. It was generally met with in pairs.—R. H. M.]

69. TERPSIPHONE CRISTATA.

Terpsiphone cristata (Gmel.); Witherby, p. 259; Grant & Reid, p. 663.

a-n. ♂ ♀ et ♂ imm. 20 miles N. of Fashoda. 13th-14th April. Nos. 345-357 §.

† Sexed male.

‡ Sexed female.

§ Nos. 353, 354 were males breeding, the former in the perfect adult plumage, the latter in chestnut plumage with only a few adult feathers in the wing.

o. ♂. 20 miles N. of Fashoda, 17th April. No. 372.

p-r. ♂ et ♂ imm. Kaka; 22nd April. No. 389-391.

Ad. ♂ ♀. Iris dark hazel; eyelid cobalt-blue; bill cobalt-blue, blackish at tip; legs and feet bluish-ash.

Imm. ♂. Similar to the above, but with the colours of the soft parts less pronounced, the blue of the bill being obscured.

[This beautiful Paradise-Flycatcher was rather scarce in February and March south of Jebel Ahmed-Agha, but on my return at the end of May it was very plentiful. It was somewhat shy and kept to the tops of the trees, but if I remained quiet it soon came down and shewed itself off.—R. M. H.]

70. COTILE RIPARIA.

Cotile riparia (Linn.); Sharpe, Cat. B. Brit. Mus. x. p. 96 (1885); N. C. Roths. & Wollast. p. 19.

Clivicola riparia Witherby, p. 259.

a-c. ♀. Goz-Abu-Gumar, 17th May. Nos. 494-496.

Iris hazel; bill and legs dusky.

[I saw only one small flock of Sand-Martens, in company with some Common Swallows.—R. M. H.]

71. HIRUNDO RUSTICA.

Hirundo rustica Linn.; Witherby, p. 259; Grant & Reid, p. 664; N. C. Roths. & Wollast. p. 19.

a. ♀. Goz-Abu-Gumar, 17th May. No. 493.

Iris hazel; bill black; legs and feet black.

[I noticed only one flock of Common Swallows. All Swallows were rare up the Nile. I only saw them occasionally in small parties.—R. M. H.]

72. HIRUNDO ÆTHIOPICA.

Hirundo æthiopica Blanford; Grant, Ibis, 1900, p. 176; N. C. Roths. & Wollast. p. 19.

a, b. ♀. Fashoda, 25th & 30th March. Nos. 178, 249.

Iris hazel; bill and legs black.

[I saw several small flocks of the Ethiopian Swallow.—R. M. H.]

73. HIRUNDO RUFULA.

Hirundo rufula Temm.; Sharpe, Cat. B. Brit. Mus. x. p. 156 (1885).

a. ♂. Fashoda, 22nd March. No. 163.

Iris hazel; bill black; legs and feet black.

[Only a single example of the Red-rumped Swallow was seen.—R. M. H.]

74. *MESOPICUS PŒOCEPHALUS*.

Mesopicus goertan Hargitt, Cat. B. Brit Mus. xviii. p. 368 (1890) [part.]; Witherby, p. 265; N. C. Roths. & Wollast. p. 24.

Dendrobates poicephalus Swains. B. W. Afr. ii. p. 154 (1837).

a. ♂. Kaka, 23rd Feb. No. 64.

b, c. ♂ ♀. 20 miles N. of Fashoda. 11th April. Nos. 313, 314.

d. ♀. Kaka, 23rd April. No. 398.

Iris hazel; bill and legs dark slate-grey.

Dr. Reichenow (Orn. Monatsb. viii. p. 58, 1900) discusses this species and its allies, and recognises the typical species from Senegal and three subspecies:—

1. *Mesopicus goertan poicephalus* (Swains). *Hab.* W. Africa, Gambia to Loango.
2. *Mesopicus goertan abessinicus* Reichenow. *Hab.* Abyssinia, Kordofan, and Sennar.
3. *Mesopicus goertan centralis* Reichenow. *Hab.* Bahr-el-Ghazal to Niam-Niam and Sük.

An examination of the fine series in the National Collection shews that the typical birds from Senegal certainly have, as stated by Dr. Reichenow, the back of a more golden-olive colour; but we cannot agree with him as regards the other subspecies: the characters ascribed to them do not hold good, and birds from Gambia, the White Nile, and Abyssinia are indistinguishable from one another, and all should be included under the one title, *M. pœocephalus* (Swains.).

[The Goertan Woodpecker is a fairly common bird.—R. M. H.]

75. *CAMPOTHERA NUBICA*.

Campothera nubica (Gmel.) ; Witherby, p. 265 ; Grant & Reid, p. 666.

a. ♂. Kaka, 13th March. No. 133.

b. ♂ imm. 20 miles N. of Fashoda. 6th April. No. 297.

Iris hazel ; bill slaty grey ; legs greenish ash.

[The Nubian Woodpecker is fairly common.—R. M. H.]

76. *IYNGIPICUS OBSOLETUS*.

Iyngipicus obsoletus (Wagl.) ; Hargitt, Cat. B. Brit. Mus. xviii. p. 336 (1890) ; Witherby, p. 265.

a, b. ♂ ♀. Fashoda, 26th March. Nos. 193, 194.

Iris light brown ; bill dusky ; legs greyish.

[This pigmy Woodpecker is rare : I only saw three pairs.—R. M. H.]

77. *MELANOBUCCO VIEILLIOTI*.

Under this title two distinct forms have been united in the 'Catalogue of Birds.' That from Abyssinia is, however, quite different from that found in West Africa, and the two should be separated as follows :—

(1) *MELANOBUCCO VIEILLIOTI*.

Pogonias vieilloti Leach, Zool. Misc. ii. pl. 97 (1815).

Bucco fuscescens Vieill. N. Dict. d'Hist. Nat. iii. p. 241 (1816).

Melanobucco vieilloti Shelley, Cat. B. Brit. Mus. xix. p. 26 (1891) [part., Abyssinia, specimen ♂] ; Witherby, p. 265.

Adult. Feathers of the middle of the back mostly white ; throat, chest, and middle of the breast white, each feather with a small scarlet spot at the tip, giving these parts a *spotted* appearance ; sides of the breast and flanks white, tinged with yellow, the latter shewing few, if any, black shaft-stripes.

Hab. Abyssinia and the White Nile.

No trace can now be found of Leach's type, once in the British Museum ; but there can be no doubt that the bird which he figured was the spotted Abyssinian form.

a. ♂. Fashoda, 2nd April. No. 285.

b, c. ♂ ♀. Kaka, 24th April & 1st May. Nos. 399, 414.

Iris hazel; bill and legs black.

[Vieillot's Barbet is fairly well distributed, but not common.—R. M. H.]

(2) *MELANOBUCCO RUBESCENS*.

Le Barbu Rubicon Levaill. *Barbus*, iii., Suppl. p. 43, fig. *d* (1807).

Pogonias rubescens Temm. *Pl. Col.* iii., *Pogonias*, sp. 5 (1823).

Pogonias senegalensis Licht. Verz. Doubl. p. 9 (1823).

Pogonias rubicon Cuv. *Règ. Anim.* p. 457 (1829).

Pogonorhynchus vieilloti Marshall, *Monog. Capit.* p. 21, pl. xi. (1871) [Fantee].

Melanobucco vieilloti Shelley, *Cat. B. Brit. Mus.* xix. p. 26 (1891) [part., W. Africa, specimens *a-n*].

Adult. Feathers of the middle of the back brown, edged with yellowish white; throat, chest, and middle of the breast widely tipped with scarlet, giving these parts the appearance of being *heavily mottled* with scarlet; sides of the breast and flanks yellower, the latter with black middles to the feathers.

Hab. West Africa.

78. *CUCULUS CANORUS*.

Cuculus canorus Linn.; Shelley, *Cat. B. Brit. Mus.* xix. p. 245 (1891); Witherby, p. 264.

a. ♂. 20 miles N. of Fashoda, 14th April. No. 359.

b. ♂. Kaka, 23rd April. No. 393.

Iris yellowish brown; eyelids yellow; bill dusky, yellowish at base of lower mandible; gape orange; legs and feet dark yellow.

[I never observed the Cuckoo till April, when I heard one calling very feebly.—R. M. H.]

79. *CHRYSOCOCYX KLAASI*.

Chrysococcyx klaasi Steph.; Shelley, *Cat. B. Brit. Mus.* xix. p. 283 (1891).

a. ♂. Renk, 10th May. No. 463.

Bill, legs, and feet black.

[I only saw two of the beautiful Klaas's Bronze Cuckoo.—R. M. H.]

80. COCCYSTES GLANDARIUS.

Coccytes glandarius Shelley, Cat. B. Brit. Mus. xix. p. 212 (1891); N. C. Roths. & Wollast. p. 24.

a. ♀. Kaka, 22nd April. No. 392.

b. ♂. Goz-Abu-Gumar, 19th May. No. 517.

Iris hazel; bill blackish, ochreous at base of lower mandible; legs and feet ashen.

[The Great Spotted Cuckoo was not at all common.—R. M. H.]

81. CENTROPUS SUPERCILIOSUS.

Centropus superciliosus Hempr. & Ehr.; Grant & Reid, p. 670; N. C. Roths. & Wollast. p. 24.

a. ♂. Ed-Duem, 22nd May. No. 537.

Iris bright red; bill black; legs and feet olivaceous.

[I only saw the White-eyebrowed Lark-heeled Cuckoo once.—R. M. H.]

82. CENTROPUS MONACHUS.

Centropus monachus (Rüpp.); Grant, Ibis, 1900, p. 310.

a. ♂. Kaka, 7th May. No. 443.

Iris crimson; bill, legs, and feet black.

[The Purple-headed Lark-heeled Cuckoo was very common along the river and khors. It lived amongst the long flags.—R. M. H.]

83. COLIUS MACRURUS.

Colius macrurus (Linn.); Witherby, p. 264; Grant & Reid, p. 670.

Colius macrourus pulcher Neumann, J. f. O. 1900, p. 190.

a-c. ♂ ♀. Kaka, 17th April & 1st May. Nos. 379, 380, 416.

Iris hazel; bill red, black at tip; legs and feet purplish red.

The three birds before us have the forehead very faintly tinged with fulvous and are scarcely distinguishable in this respect from what Mr. Neumann calls *C. macrourus pulcher*. We are inclined to believe that the fulvous colouring of the forehead in some individuals is adventitious and probably due to something on which the birds feed: it is apparently not caused by different surroundings.

[The Blue-naped Coly is fairly common. I took one nest in an orange-tree in Khartum; it was flat and made of sticks covered with cotton, and contained two eggs, which were white with irregular brown blotches.—R. M. H.]

84. TACHORNIS PARVA.

Tachornis parva (Licht.); Hartert, Cat. B. Brit. Mus. xvi. p. 463 (1892); N. C. Roths. & Wollast. p. 19.

a. ♂. Renk, 10th May. No. 461†.

Iris hazel; bill and legs black.

[I saw this little grey Tree-Swift in small companies on three occasions.—R. M. H.]

85. CAPRIMULGUS ÆGYPTIUS.

Caprimulgus ægyptius Licht.; Hartert, Cat. B. Brit. Mus. xvi. p. 562 (1892); N. C. Roths. & Wollast. p. 22.

a, b. ♂ ♀. Kaka, 15th March. Nos. 135 & 136.

Iris dark hazel; bill dusky; legs and feet pinkish horn-coloured.

[Only four examples of the Egyptian Nightjar were seen during the trip. They were perched on a bare hillock on a plain, and when disturbed soared in the air, like a Kite, before settling again.—R. M. H.]

86. SCOTORNIS CLIMACURUS.

Scotornis climacurus Vieill.; Hartert, Cat. B. Brit. Mus. xvi. p. 596 (1892); Witherby, p. 261; N. C. Roths. & Wollast. p. 22.

Scotornis nigricans Salvad. Atti Soc. Ital. Sc. Nat. xi. p. 450 (1868).

a, b. ♂ ♀. Jebel Ain, 11th Feb. Nos. 56, 57.

c-g. ♂ ♀ et imm. Kaka, 17th April–7th May. Nos. 374, 375, 376, 430, 447 †.

Iris dark hazel; bill horn-coloured; legs and feet fleshy brown.

Dr. Sharpe (cf. Hand-l. Birds, ii. p. 82) has resuscitated *S. nigricans* Salvad., which Mr. Hartert considers synonymous with *S. climacurus*. The series collected by Mr. Hawker clearly shews that the former is merely a dark form of

S. climacurus, the male from Jebel Ain (No. 57) being intermediate in tint between the two types.

[The Long-tailed Nightjar was the commonest of its kind on the White Nile. It was sometimes found in companies of from four to seven under bushes. I found several clutches of its eggs, which were not previously represented in the British Museum Collection.—R. M. H.]

87. MACRODIPTERYX MACRODIPTERUS.

Macrodipteryx macrodipterus (Afzel.); Grant, Ibis, 1900, p. 312.

a-d. ♂ ♀ et ♂ imm. Kaka, 3rd-7th May. Nos. 427-429 & 446 †.

Iris dark hazel; bill, legs, and feet dusky.

[I met with the Standard-winged Nightjar on three occasions and procured one egg, which was laid on the bare ground near a game-path at Kaka.—R. M. H.]

88. MELITTOPHAGUS PUSILLUS.

Melittophagus pusillus P. L. S. Müller; Grant, Ibis, 1900, p. 313.

Merops pusillus Witherby, p. 262; N. C. Roths. & Wollast. p. 23.

a. ♂. Khartum, 23rd Jan. No. 1.

b. ♂. Fashoda. 30th March. No. 247.

c. ♂. Kaka, 29th April. No. 408.

Iris crimson; bill and legs black.

[The Rufous-winged Bee-eater was seen in a garden at Khartum, and all along the river as far south as Fashoda.—R. M. H.]

89. MEROPS VIRIDIS.

Merops viridis Linn.; Sharpe, Cat. B. Brit. Mus. xvii. p. 78 (1892).

Merops viridissimus Swains.; Witherby, p. 262; N. C. Roths. & Wollast. p. 23.

a, b. ♂. Kaka, 8th-13th March. Nos. 124, 131.

c. ♀. 20 miles N. of Fashoda, 8th April. No. 303.

† Breeding; egg obtained.

d. ♂. Kaka, 17th April. No. 373.

e. ♀ imm. Goz-Abu-Gumar, 16th May. No. 476.

Iris crimson; bill black; legs greyish black.

As Mr. Witherby remarks, African examples of this Bee-eater have the throat green or yellowish green, whereas in the great majority of Indian specimens the throat is blue or bluish green. At the same time, he overlooks the fact that a number of Indian birds in the British Museum Collection from Sambhur, Ahmednuggur, Chittagong, and various other parts of India and Burmah have the throat yellowish green and are indistinguishable from African examples. I therefore prefer to follow Dr. Sharpe in the 'Catalogue of Birds' and to regard all of them as belonging to one species, *M. viridis*.

[The Green Bee-eater was by no means common.—R. M. H.]

90. MEROPS PERSICUS.

Merops persicus Pall.; Sharpe, Cat. B. Brit. Mus. xvii. p. 66 (1892); Witherby, p. 263.

a-e. ♂ ♀. Fashoda, 22nd March. Nos. 169–173.

f, g. ♂. Kaka, 22nd April. Nos. 387, 388.

Iris crimson; bill black; legs dusky.

[I saw one flock of the Persian Bee-eater at Fashoda, and a couple of birds at Kaka.—R. M. H.]

91. MEROPS ALBICOLLIS.

Merops albicollis Vieill.; Sharpe, Cat. B. Brit. Mus. xvii. p. 76 (1892).

a-h. ♂ ♀. Goz-Abu-Gumar, 18th May. Nos. 500–507.

Iris crimson; bill black; legs pale ochreous.

[The lovely White-throated Bee-eater was not met with south of Goz-Abu-Gumar.—R. M. H.]

92. MEROPS NUBICUS.

Merops nubicus Gmel.; Grant, Ibis, 1901, p. 673.

a-e. ♂ ♀. Gebel Ain, 11th Feb. Nos. 51–55.

f. ♂. Renk, 12th May. No. 468.

Iris crimson; bill and legs black.

[We met with the beautiful Crimson-breasted Bee-eater

on Abba Island. I had lighted some reeds to smoke out rats when a flock of these birds arrived to catch the insects which had been driven out by the fire. The species was only observed in flocks in a few localities. The cry is unlike that of the typical Bec-eater.—R. M. H.]

93. *UPUPA EPOPS.

Upupa epops Linn.; Witherby, p. 263; Grant & Reid, p. 673; N. C. Roths. & Wollast. p. 23.

[The Hoopoe was distributed all along the river, but was not common.—R. M. H.]

94. IRRISOR ERYTHORRHYNCHUS.

Irrisor erythrorhynchus Grant, Bull. B.O.C. xii. no. lxxxiv. pp. 36, 37 (1901).

a, b. ♂ et ♂ imm. Fashoda, 31st March. Nos. 257, 258.

c, d. ♀. Goz-Abu-Gumar, 18th May. Nos. 510, 511.

Iris hazel; bill and feet red.

Mr. Hawker's specimens belong to the true *I. erythrorhynchus* (Lath.).

[The Red-billed Wood-Hoopoe was generally found in flocks and made a great deal of noise.—R. M. H.]

In the 'Catalogue of Birds' Salvin divided the forms of *Irrisor* with the head metallic green or purple into two species as follows:—

1. *I. viridis*. With the tail more or less purple.

2. *I. erythrorhynchus*. With the tail more or less greenish blue.

The colour of the tail cannot, however, be relied on as a specific distinction.

Salvin considered that the birds with black bills were merely the young of those with red bills. It is perfectly true that in the red-billed forms the young have the bill dusky, but there can be little doubt that the great majority of the specimens considered by him to be the young of *I. erythrorhynchus* represent distinct species. Young birds may be recognised by the buff feathers on the chin and throat. The whole group appears to be much in need of

revision, and I propose the following arrangement of the species in Salvin's first section :—

- I. Head and throat metallic green, or black glossed with purplish; wings and tail with white spots.
 - A. Bill scarlet in the adult bird (dusky or partly dusky in the immature).
 - a. Back metallic green.
 - a'. Tail longer, 9·0–10·0 inches; white band on quills wider, 0·9–1·1 inch in width *I. erythrorhynchus*.
 - b'. Tail shorter, 7·0–8·0 inches; white band on quills narrower, 0·5 inch in width *I. viridis*.
 - b. Back sooty black with a purplish-bronze gloss. *I. damarensis*.
 - B. Bill black in the adult bird.
 - c. Head, nape, and back glossed with metallic green and purplish blue *I. melanorhynchus*.
 - d. Nape and back velvety black, slightly glossed with dull purplish blue; crown of the head very similar, but with indistinct green bronze-edged spots *I. somaliensis*.
- II. Head and throat buff or white; wings and tail spotless *I. jacksoni*, &c.

The synonymy of these different species should stand as follows :—

(1) *IRRISOR ERYTHORHYNCHUS*.

Upupa erythrorhynchus Lath. Ind. Orn. i. p. 280 (1790).

Promerops purpureus Shaw & Miller, Cimel. Phys. pl. 52 (1796).

Irrisor erythrorhynchus Salvin, Cat. B. Brit. Mus. xvi. p. 19 (1892) [part. spec. *f, g, l, v, w*].

Irrisor viridis Salvin (nec Licht.), Cat. B. Brit. Mus. xvi. p. 17 (1892) [part. spec. *a-t, v*, and *o'*].

Hab.† WEST AFRICA: Loando; Gold Coast. NORTH-EAST AFRICA: Darfur; Goz-Abu-Gumar, White Nile; Fashoda; mouth of Zeraf River. EQUATORIAL AFRICA: Niam-Niam, Uganda, Lake Baringo. EAST AFRICA: Mombasa, Dar-es-Salaam, Mamboio, Ugogo, Usambara, Nyasaland, Shiré River. SOUTH-EAST AFRICA: Mashonaland, Matabeleland, Makalaka Country, Transvaal, Natal.

† The localities given are those of the British Museum Collection.

(2) *IRRISOR VIRIDIS*.

Upupa viridis A. A. II. Licht. Cat. Rer. Nat. Hamb. p. 22 (1793) ["Kaffir-land"].

Irrisor capensis Less. Traité d'Orn. p. 239 (1831).

Irrisor viridis Salvin, Cat. B. Brit. Mus. xvi. p. 17 (1892) [part. spec. *u* and *w-c'*].

Hab. SOUTH AFRICA: Swaziland, Natal; Knysna, in Cape Colony.

The Swaziland bird is somewhat intermediate between *I. erythrorhynchus* and *I. viridis*, having the wider white band across the quills of the former species, and the shorter tail of the latter.

(3) *IRRISOR DAMARENSIS*, sp. n. (Pl. X. fig. 1.)

Irrisor viridis Salvin, Cat. B. Brit. Mus. xvi. p. 17 (1892) [part. spec. *d'-n'*].

Adult. Crown, nape, back, breast, and sides sooty black, with a purplish-bronze gloss, the crown spangled with metallic green bronze-edged spots; chin and throat dark metallic green; white band across the primaries 0·9–1·1 inch wide; bill red. Total length ca. 17·0 inches; culmen of ♂ 2·2, of ♀ 1·7; wing 5·7–6·4; tail 9·6–10·3.

Hab. SOUTH-WEST AFRICA: Damaraland. EAST AFRICA: Kibwezi, Ngomeni, and Machakos, B. E. Africa.

The birds from British East Africa have the white band across the quills somewhat narrower than in typical Damaraland birds, but are otherwise identical.

(4) *IRRISOR MELANORHYNCHUS*.

Nectarinia melanorhynchus Licht. Verz. Doubl. p. 15 (1823) [Senegal].

Falcinellus senegalensis Vicill. Enc. Méth. ii. p. 580 (1823).

Irrisor erythrorhynchus Salvin, Cat. B. Brit. Mus. xvi. p. 19 (1892) [part. spec. *a-e*, *h-k*, and *m-u*].

Hab. W. AFRICA: Senegambia; also N.E. AFRICA: Bogosland and Tigre, N. Abyssinia.

I cannot distinguish the Abyssinian birds from West-African specimens.

(5) *IRRISOR SOMALIENSIS*, sp. n. (Pl. X. fig. 2.)

Adult. Top of the head blackish, with indistinct green bronze-edged spots; nape, back, and breast velvety black, slightly glossed with dull purplish blue; upper throat dark steel-blue, lower throat metallic green; rest of under parts brownish black; bill black. Total length ca. 17·0 inches; culmen of ♂ 2·5, of ♀ 1·8; wing 5·5–6·1; tail 8·0–9·3.

Hab. N.E. AFRICA: Somaliland.

95. *SCOPELUS NOTATUS*.

Scopelus notatus Salvin; Salvin, Cat. B. Brit. Mus. xvi. p. 22 (1892).

a, b. ♀. Fashoda, 26th Mar. & 2nd April. Nos. 190, 283.

c. ♂. 20 miles N. of Fashoda, 15th April. No. 361.

The *adult male* has the tips of the flight-feathers and the sides of the head, throat, and under parts purplish black.

The *adult female* differs from the adult male in having the tips of the primaries brownish white and the sides of the face, chin, throat, and breast sooty brown.

In the 'Catalogue of Birds' Salvin describes these differences as due to age; but this is not the case, though it is true that the young male resembles the female.

[The Straight-billed Wood-Hoopoe was plentifully distributed south of Jebel Ahmed-Agha. It was always seen in pairs.—R. M. H.]

96. *LOPHOCEROS ERYTHORHYNCHUS*.

Lophoceros erythrorhynchus (Temm.); Witherby, p. 263; Grant & Reid, p. 675.

a-d. ♂ ♀ et ♂ ♀ imm. 20 miles N. of Fashoda, 6th–16th April. Nos. 292, 293, 320, 369.

Ad. Iris hazel; bill reddish, lighter at base, a black streak on lower mandible; legs black.

[The Red-billed Hornbill was fairly common, but very wild. I found it nesting inside a tree, but could not cut out the wood to see if there were any eggs.—R. M. H.]

97. *CERYLE RUDIS*.

Ceryle rudis (Linn.); Witherby, p. 264; Grant & Reid, p. 676; N. C. Roths. & Wollast. p. 24.

a. ♂ imm. Kaka, 5th March. No. 109.

b-d. ♂ imm. et ♀. Fashoda, 26th March. Nos. 184, 185, 200.

Iris hazel; bill and legs black.

[The Pied Kingfisher is very common all along the Nile.—R. M. H.]

98. *CORYTHORNIS CYANOSTIGMA.*

Corythornis cyanostigma (Rüpp.); Grant & Reid, p. 677.

a. ♂. Fashoda, 25th March. No. 179.

b. ♂. Fashoda, 1st April. No. 275.*

c. ♀. Goz-Abu-Gumar, 19th May. No. 518.

Iris hazel; bill and legs vermilion.

[The Malachite-crested Kingfisher is rather rare on the White Nile.—R. M. H.]

99. *HALCYON SEMICÆRULEA.*

Halcyon semicærulea (Forskål); Grant & Reid, p. 677.

a. ♂. Near Renk, 15th May. No. 472.

b. ♂. Goz-Abu-Gumar, 19th May. No. 513.

Iris hazel; bill vermilion; legs dark red.

[The African Grey-headed Kingfisher was generally to be seen in the scrub along the Nile. I never saw it fishing. It was very wild and not often observed.—R. M. H.]

100. *HALCYON CHELICUTENSIS.*

Halcyon chelicutensis (Stanl.); Grant & Reid, p. 678.

a. ♂. Fashoda, 29th March. No. 231.

b, c †. ♀. 20 miles N. of Fashoda, 6th & 14th April. Nos. 296 & 358.

d. ♂. Kaka, 23rd April. No. 396.

Iris dark hazel; bill dull red, dusky at tip; legs purplish red in front of tarsus, chrome-red at back.

[I generally found the Striped Kingfisher some way from water; it seems to feed chiefly on insects. It is fairly common.—R. M. H.]

101. *EURYSTOMUS AFER.*

Eurystomus afer (Lath.); Grant, Ibis, 1900, p. 318.

† Breeding.

a. ♀. Renk, 12th May. No. 466.

Iris hazel; bill yellow; legs olivaceous.

[I only saw the African Roller once.—R. M. H.]

102. *CORACIAS ABYSSINICUS*.

Coracias abyssinicus Bodd.; Witherby, p. 262; Grant & Reid, p. 678; N. C. Roths. & Wollast. p. 22.

a-c. ♂ et ♂ imm. Kaka, 24th–30th April. Nos. 404, 405, 412.

d. ♀ †. Goz-Abu-Gumar, 16th May. No. 478.

Iris hazel; bill blackish, horn-coloured at base; legs olivaceous.

[The Abyssinian Roller was fairly common and was generally found in pairs. It was usually to be seen sitting on the top of a tree or perched upon a reed on the look out for insects.—R. M. H.]

103. *PALÆORNIS DOCILIS*.

Palæornis docilis Vieill.; Salvad. Cat. B. Brit. Mus. xx. p. 447 (1891).

a-k. ♂ ♀ et ♂ ♀ imm. Goz-Abu-Gumar, 16th–19th May. Nos. 479, 481–484, 519–523.

Iris pale straw-colour; bill red, blackish at tip and on lower mandible; legs and feet grey.

[The African Ringed Parrakeet was very common about Abba Island, but I did not see it either to the north or the south of that locality.—R. M. H.]

104. *SCOPS LEUCOTIS*.

Scops leucotis (Temm.); Sharpe, Cat. B. Brit. Mus. ii. p. 97 (1875); Witherby, p. 268.

Pisorhina leucotis (Temm.); N. C. Roths. & Wollast. p. 27.

a. ♂. Goz-Abu-Gumar, 16th May. No. 473.

Iris orange-yellow; bill horn-coloured.

[I only saw one specimen of the White-eared Scops Owl. It was sitting quite upright, on a high branch of a *Mimosa nilotica* and looked more like a dead stick than a bird.—R. M. H.]

† Breeding.

105. *BUBO LACTEUS*.

Bubo lacteus (Temm.); Witherby, p. 269; Grant & Reid, p. 680.

a, b. ♂ ♀. Kaka, 24th April. Nos. 402, 403.

c, d. ♂ ♀. Near Renk, 14th May. Nos. 574, 575.

Iris dark hazel; bill and cere white; gape and orbits flesh-coloured; feet whitish horn-coloured.

[Verreaux's Eagle-Owl was not very common. I saw it in pairs, but never found its nest.—R. M. H.]

106. *BUBO CINERASCENS*.

(Grey Phase.)

Bubo cinerascens (Guérin); Sharpe, Cat. B. Brit. Mus. ii. p. 32 (1875).

a. ♂ imm. 20 miles N. of Fashoda, 22nd April. No. 383.

b. No particulars.

Iris dark hazel; bill black, lighter on lower mandible; claws black.

[The Grey Eagle-Owl was rather common. When once disturbed it was very difficult to get near it again. I found several sets of young birds: some on the ground at the roots of trees, and others in the hollows formed by the branches and the tops of the trunks. One old bird attacked me and struck me several times on the helmet when I was climbing the tree in which it had its brood. I also found young of this species in an old Kite's nest.—R. M. H.]

(Rufous Phase.)

Bubo abyssinicus (Guérin); Sharpe, Ibis, 1898, p. 289; Oates, Cat. Eggs Brit. Mus. ii. p. 379 (1902).

a. ♀. Kaka, 21st April. No. 381.

Iris brown; bill black; cere horn-coloured; feet dusky.

[The rufous phase of the Grey Eagle-Owl was fairly common south of Jebel Ahmed-Agha, where two eggs were procured. They were not previously represented in the British Museum Collection.—R. M. H.]

There can be little doubt that the *B. cinerascens* and *B. abyssinicus* of Guérin are merely phases of one species. For some unknown reason Dr. Reichenow [*cf.* Vög. Afr. i.

pt. ii. p. 661 (1901)] places the latter under the genus *Asio*; though Dr. Sharpe has carefully pointed out that the bird is a true *Bubo*, as is shewn by the shape of the oral orifice.

107. *STRIX FLAMMEA*.

Strix flammea Linn.; Sharpe, Cat. B. Brit. Mus. ii. p. 291 (1875); Witherby, p. 268.

Strix flammea maculata Brehm; N. C. Roths. & Wollast. p. 26.

a. ♂. Kaka, 24th April. No. 406.

b. ♂. Goz-Abu-Gumar, 16th May. No. 480.

Iris dark hazel; bill flesh- or horn-coloured.

[The Barn-Owl was not at all common. I saw only four birds in all. They were wild and difficult to get near.—R. M. H.]

108. **SERPENTARIUS SECRETARIUS*.

Serpentarius secretarius (Scop.); Sharpe, Cat. B. Brit. Mus. i. p. 45 (1874).

[The Secretary-Bird was very rare, and I saw only three, one near Kaka and two near Renk. It was very wild and would not let me get within 300 yards of it. It soared to a great height.—R. M. H.]

109. **GYPs RUEPPELLI*.

Gyps rueppelli (Brehm); Sharpe, Cat. B. Brit. Mus. i. p. 9 (1874); Witherby, p. 270; N. C. Roths. & Wollast. p. 28.

[This large Vulture was common along the river south of Goz-Abu-Gumar. It always appeared when any large game was killed. The Black-and-White Crow was the first bird to arrive at such times, and was followed by Kites, *Neophron monachus*, *Gyps rueppelli*, and *Otogyps auricularis*, in order, while the Marabou Stork brought up the rear.]

110. **OTOGYPs AURICULARIS*.

Otogyps auricularis (Daud.); Sharpe, Cat. B. Brit. Mus. i. p. 13 (1874).

[This Vulture was fairly common south of Jebel Ahmed-Agha. It was much shyer than the other Vultures and not so numerous as *G. rueppelli*.—R. M. H.]

111. *NEOPHRON PERCNOPTERUS.

Neophron percnopterus (Linn.) ; Sharpe, Cat. B. Brit. Mus. i. p. 17 (1874) ; Witherby, p. 271 ; N. C. Roths. & Wollast. p. 29.

[The Egyptian Vulture was common about Khartum, but was rarer further south.—R. M. H.]

112. *NEOPHRON MONACHUS.

Neophron monachus (Temm.) ; Sharpe, Cat. B. Brit. Mus. i. p. 19 (1874).

[This Vulture was very common south of Renk. It came round the camp and helped to clear away scraps of meat, while it was useful in cleaning up the skulls of the larger game.—R. M. H.]

113. CIRCUS ÆRUGINOSUS.

Circus æruginosus (Linn.) ; Sharpe, Cat. B. Brit. Mus. i. p. 69 (1874) ; Grant, Ibis, 1901, p. 292.

a. ♀. Fashoda, 21st March. No. 153.

Iris brown ; bill, cere, and gape horn-coloured ; legs and feet dirty yellow.

[We found the Marsh-Harrier fairly common.—R. M. H.]

114. MILVUS ÆGYPTIUS.

Milvus ægyptius (Gmel.) ; Witherby, p. 270 ; Grant & Reid, p. 681 ; N. C. Roths. & Wollast. p. 28 ; Oates, Cat. Eggs Brit. Mus. ii. pp. 285, 378 (1902).

a, b. ♀. Kaka, 2nd March. No. 97.

c. ♀. Fashoda, 29th March. No. 234†.

d. ♂ pull. Fashoda, 2nd April. No. 289.

e. Pull. Fashoda, 2nd April. No. 290.

Adult. Iris hazel ; bill, cere, gape, orbits, legs, and feet yellow.

Pull. Iris dark hazel ; bill slaty grey, yellow at base ; legs and feet yellowish white.

[I found many Egyptian Kites breeding near Fashoda. The nests were generally made of sticks, but I saw several made of reeds ; we procured five sets of two eggs each. These Kites used to follow us when walking through the long

† Breeding ; eggs taken.

grass, and dash down at the locusts which we disturbed. They were very useful, as they followed buffalos and other game, and so shewed the line which the animals were taking through the long grass. When they stopped the Kites left them; but directly they moved on the Kites would return and keep stooping at the locusts.—R. M. H.]

115. MELIERAX POLYZONUS.

Melierax polyzonus (Rüpp.) ; Witherby, p. 270 ; Grant & Reid, p. 682 ; Oates, Cat. Eggs Brit. Mus. ii. p. 377.

a. ♀. Jebel Auli, 4th Feb. No. 40.

b. ♂. Kaka, 2nd March. No. 98.

c. ♂ pull. Kaka, 22nd April. No. 384.

Adult. Iris dark hazel ; cere and base of upper mandible coral-red ; culmen and tip of lower mandible black ; legs and feet coral-red.

Pull. Iris dark hazel ; bill blackish grey ; cere, gape, and orbits yellowish ; legs and feet yellowish flesh-coloured.

[The Many-banded Goshawk was very common. I took two nests with eggs. One of them was evidently the old structure of some other bird ; the second was loosely constructed of sticks and placed on the horizontal branch of a mimosa. The eggs of this species are new to the British Museum Collection.—R. M. H.]

116. MELIERAX GABAR.

Melierax gabar (Daud.) ; Grant & Reid, p. 682 ; N. C. Roths. & Wollast. p. 28.

a. ♂. Kaka, 24th April. No. 401.

b. ♂. Goz-Abu-Gumar, 16th May. No. 474.

Iris hazel ; bill black ; gape, cere, orbits, legs, and feet red.

[The Red-faced Goshawk was only seen on three occasions.—R. M. H.]

117. LOPHOAËTUS OCCIPITALIS.

Lophoaëtus occipitalis (Daud.) ; Grant, Ibis, 1900, p. 321 ; Oates, Cat. Eggs Brit. Mus. ii. p. 274 (1902).

a, b. ♂ ♀. Fashoda. 21st March. Nos. 155, 156 †.

† A pair breeding ; eggs taken.

Iris orange-yellow ; bill black, slaty grey at base ; cere and orbit greenish dusky ; legs and feet pale yellow.

[I saw the Black-crested Eagle fairly often. It was generally sitting at the top of a tree on the look out, and was rather hard to shoot. At other times it might be seen soaring fairly high. I found two nests with two eggs in each ; they were placed in trees and were rather small structures of sticks, lined with a few leaves, the eggs being covered with some greener leaves. The eggs of this species are new to the British Museum Collection.—R. M. H.]

118. BUTASTUR RUFIPENNIS.

Butastur rufipennis (Sund.) ; Grant, Ibis, 1900, p. 320 ; Oates, Cat. Eggs Brit. Mus. ii. p. 378 (1902).

a. ♂. Fashoda. 25th March. No. 177.

b. ♀. 20 miles N. of Fashoda. 8th April. No. 308.

c. ♀. 20 miles N. of Fashoda. 10th April. No. 310.

Iris golden yellow ; bill yellow at base, bluish grey at tip ; legs and feet yellow.

[The Red-winged Goshawk was fairly common south of Jebel Ahmed-Agha. It was generally seen sitting on a stick or reed on the flats near the river. Now and then it would dash at some insect or lizard on the ground and then return to its perch. It also, when hunting, soared in smallish circles. When above the observer the reddish-brown colour was very conspicuous. It makes a very small stick-nest lined with a few leaves, measuring about a foot across. The eggs are from one to three in number. The eggs of this species were not previously represented in the British Museum Collection.—R. M. H.]

119. *HELOTARSUS ECAUDATUS.

Helotarsus ecaudatus (Daud.) ; Sharpe, Cat. B. Brit. Mus. i. p. 300 (1874) ; Witherby, p. 270 ; Grant, Ibis, 1901, p. 294 ; N. C. Roths. & Wollast. p. 29.

Helotarsus leuconotus Rüpp. ; Sharpe, l. c. p. 301 (1874).

[I only saw the Bateleur Eagle on three occasions—once at Kowa, once near Kaka, and again near Fashoda.—R. M. H.]

120. *HALIAËTUS VOCIFER*.

Haliaëtus vocifer (Daud.) ; Witherby, p. 270 ; Grant & Reid, p. 682.

a. ♂. Ed-Duem. 23rd May. No. 568.

Iris light brown, mottled with dark brown ; cere and orbits yellow ; legs and feet flesh-coloured.

[The Vociferous Sea-Eagle was seen the whole way along the Nile and on the khors inland. I observed it several times feeding on fish that had died and had been washed ashore.—R. M. H.]

121. *FALCO FELDEGGI*.

Falco feldeggii Schl. ; Sharpe, Cat. B. Brit. Mus. i. p. 389 (1874) ; Oates, Cat. Eggs Brit. Mus. ii. pp. 299, 378 (1902).

a. ♀. Fashoda, 21st March. No. 157.

Iris hazel ; bill dark slate-grey, yellowish at base ; cere and orbits ochreous ; legs and feet yellow.

[We found the Lanner Falcon fairly common, and obtained a clutch of four eggs at Fashoda.—R. M. H.]

122. *FALCO RUFICOLLIS*.

Falco ruficollis Swains. ; Sharpe, Cat. B. Brit. Mus. i. p. 404 (1874) ; Oates, Cat. Eggs Brit. Mus. ii. p. 378 (1902).

a. ♀. 20 miles N. of Fashoda, 8th April. No. 309.

b. ♂. 20 miles N. of Fashoda, 13th April. No. 343.

c. ♂ [♀] †. 20 miles N. of Fashoda. 16th April. No. 368.

d. ♂. Kaka, 2nd May. No. 426.

a & c. Iris dark hazel ; bill bluish black, yellow at base ; cere and orbits yellow ; legs and feet gamboge-yellow.

b & d. Iris hazel ; bill blue-black, ochreous yellow at base ; legs and feet gamboge-yellow.

[This pretty little Red-headed Falcon was fairly common near Fashoda. I found three young and an addled egg in an old Kite's nest. The egg of this species is new to the British Museum Collection.—R. M. H.]

† Obviously a female.

123. CERCHNEIS TINNUNCULUS.

Cerchneis tinnunculus (Linn.); Grant & Reid, p. 683.

a. ♀. Wad Shali, 5th Feb. No. 41.

b. ♂. Jebel Ain, 11th Feb. No. 58.

Iris hazel; bill bluish slate-coloured; legs and feet ochreous yellow.

[I saw large flocks of the Kestrel in February near Ed-Duem soaring high over the river. Further south it was very rarely met with.—R. M. H.]

124. PHALACROCORAX AFRICANUS.

Phalacrocorax africanus (Gmel.); Witherby, p. 273; Grant & Reid, p. 683; N. C. Roths. & Wollast. p. 30.

a, b. ♀. Ed-Duem, 20th May. Nos. 532, 533.

Iris light red; bill and bare skin yellow, dusky on culmen; legs and feet black.

These two examples of the Little African Shag are in winter plumage.

125. *PLOTUS RUFUS.

Plotus rufus Lacép.; Grant & Reid, p. 683.

[Darters were common all along the river.—R. M. H.]

126. *PELECANUS ONOCROTALUS.

Pelecanus onocrotalus Linn.; Grant, Cat. B. Brit. Mus. xxvi. p. 462 (1898); Witherby, p. 273; N. C. Roths. & Wollast. p. 30.

[Pelicans were common. They came to roost on some of the khors in thousands, and flew off in the morning just after sunrise to their fishing-grounds.—R. M. H.]

127. *PHENICOPTERUS ROSEUS.

Phenicopterus roseus Pall.; Salvad. Cat. B. Brit. Mus. xxvii. p. 12 (1895); Witherby, p. 274.

[I observed Flamingoes only on two occasions near Kaka.—R. M. H.]

128. *PLECTROPTERUS RUEPPELLI.

Plectropterus rueppelli Scl.; Witherby, p. 275; Grant & Reid, p. 683.

[The Spur-winged Goose was very common. Its flesh was coarse and had an extremely unpleasant flavour.—R. M. H.]

129. *SARCIDIORNIS MELANONOTA*.

Sarcidiornis melanonota (Penn.) ; Salvad. Cat. B. Brit. Mus. xxvii. p. 54 (1895).

a, b. ♂ ♀. Fashoda, 26th–31st March. Nos. 214 & 269.

Iris hazel ; bill black ; legs and feet greyish black.

[The Black-backed or Comb Goose was fairly common and proved good eating.—R. M. H.]

130. *CHENALOPEX ÆGYPTIACA*.

Chenalopex ægyptiaca Linn. ; Witherby, p. 274 ; Grant & Reid, p. 684 ; N. C. Roths. & Wollast. p. 31.

a, b. ♂ ♀. Ed-Duem, 23rd May. Nos. 570, 571.

Iris golden yellow ; bill flesh-coloured, margined with pinkish brown ; nail and knob dusky ; legs and feet flesh-coloured.

[The Egyptian Goose was very common all along the river. I found it in full moult in February, and also saw goslings of all sizes.—R. M. H.]

131. *DENDROCYNNA VIDUATA*.

Dendrocygna viduata Linn. ; Salvad. Cat. B. Brit. Mus. xxvii. p. 145 (1895) ; Witherby, p. 275.

a-g. ♂ ♀ ad. et imm. Kaka, 23rd Feb.–15th March. Nos. 68–70, 73, 122, 123, 138.

h. ♂. Fashoda, 29th March. No. 241.

i. ♂. Jebel Auli, 25th May.

Iris hazel ; bill blackish, bluish on the band across the tip and bluish round the nasal openings ; legs and feet bluish grey, lead-coloured on the webs.

[The White-faced Tree-Duck was very common all along the river and on the khors. It is very good eating.—R. M. H.]

132. **DAFILA ACUTA*.

Dafila acuta (Linn.) ; Witherby, p. 275 ; N. C. Roths. & Wollast. p. 31.

[The Pintail Duck was fairly common as far south as El-Kawa. I shot one at the end of May near Ed-Duem.—R. M. H.]

133. **SPATULA CLYPEATA*.

Spatula clypeata (Linn.); Grant, Ibis, 1900, p. 324.

[The Shoveller was common. I saw very large flocks on a khor west of Fashoda in April.—R. M. H.]

134. **NETTION CRECCA*.

Nettion crecca (Linn.); Grant, Ibis, 1900, p. 323; N. C. Roths. & Wollast. p. 31.

[I shot several Teal near Fashoda in May.—R. M. H.]

135. *QUERQUEDULA CIRCIA*.

Querquedula circia Linn.; Grant & Reid, p. 685.

a. ♂. Fashoda, 25th March. No. 176.

Iris hazel; bill, legs, and feet dusky.

[The Garganey was very common.—R. M. H.]

136. *SCOPUS UMBRETTA*.

Scopus umbretta (Gmel.); Grant & Reid, p. 685.

a. ♂. Kaka, 5th May. No. 435.

Iris hazel; bill, legs, and feet black.

[I observed only a few Hammer-heads. They were generally seen feeding along the khors.—R. M. H.]

137. *ABDIMIA ABDIMII*.

Abdimia abdimii (Licht.); Grant, Ibis, 1900, p. 326; Oates, Cat. Eggs Brit. Mus. ii. p. 375 (1902).

a. ♀. Fashoda, 31st March. No. 266.

Iris hazel; bill greenish, reddish at tip; cheeks dark blue; bare skin round eye red; throat red; legs olivaceous, feet and knee-joints pink.

[The White-bellied Stork is common from Fashoda to Khartum. I took three eggs out of a nest which was built in a tree in the middle of a Shilluk village. The eggs of this bird were not previously represented in the British Museum Collection.—R. M. H.]

138. *DISSURA EPISCOPUS*.

Dissura episcopus (Bodd.); Grant, Ibis, 1900, p. 326.

a. ♀. 20 miles N. of Fashoda, 16th April. No. 367.

Iris hazel; bill blackish red, darker along crest of culmen; bare skin on head dark blue; legs greyish black.

[We did not find the White-necked Stork very common. It was generally seen feeding on newly burnt ground.—R. M. H.]

139. *CICONIA ALBA.

Ciconia ciconia (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 299 (1898).

Ciconia alba Witherby, p. 272 ; N. C. Roths. & Wollast. p. 29.

[White Storks were plentiful on our way up the river from Omdurman to Abba Island, but were not observed on our return at the end of May.—R. M. H.]

140. *CICONIA NIGRA.

Ciconia nigra Bechst. ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 303 (1898) ; Witherby, p. 272 ; N. C. Roths. & Wollast. p. 29.

[I noticed the Black Stork in February between Ed-Duem and Omdurman.—R. M. H.]

141. ANASTOMUS LAMELLIGERUS.

Anastomus lamelligerus Temm. ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 308 (1898) ; Witherby, p. 273 ; N. C. Roths. & Wollast. p. 30.

a. ♂. Ed-Duem, 23rd May. No. 569.

Iris brown, with a golden ring round the pupil ; bill dusky, reddish at base ; legs and feet black.

[We found the Open-billed Stork common along the river. It was breeding in April near Fashoda.—R. M. H.]

142. EPHIPPIORHYNCHUS SENEGALENSIS.

Ephippiorhynchus senegalensis (Shaw) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 312.

a, b. Ad. (heads only). Kaka, 15th March. No. 169.

[The Senegal Jabiru, or Saddle-billed Stork, was not common, and was generally found in pairs feeding on frogs in the swamps. I procured two specimens, but both skins were destroyed by beetles. It was not observed north of Jebel Ahmed-Agha.—R. M. H.]

143. **LEPTOPTILUS CRUMENIFERUS*.

Leptoptilus crumeniferus (Cuv.); Sharpe, Cat. B. Brit. Mus. xxvi. p. 319 (1893); Witherby, p. 273; N. C. Roths. & Wollast, p. 30.

[The Adjutant-Bird, or Marabou Stork, was common. It seemed to be able to get its food either on land or from the water. It followed in the wake of fires to feed on the scorched insects and reptiles. It attended the death of any animal, and I also once saw it standing in a swamp on the look out for fishes and frogs.—R. M. H.]

144. *PSEUDOTANTALUS IBIS*.

Pseudotantalus ibis (Linn.); Sharpe, Cat. B. Brit. Mus. xxvi. p. 327 (1893); Witherby, p. 273.

a. ♂. Fashoda, 31st March. No. 267.

Iris greyish; bill ochreous; cheeks light red; legs red at upper end of tibia, shading into pink on the tarsus and feet.

The male brought home by Mr. Hawker—apparently a fully adult bird—has all the freshly-moulted upper wing-coverts uniform white tinged with rose, while only a few hidden feathers of the greater upper wing-coverts, scapulars, and tail-coverts—all in worn condition—shew the lake bars characteristic of what has generally been recognised as the adult plumage. I am of opinion that further investigation will prove that the African Wood-Ibis *has distinct winter and summer plumages*. In the former all the upper wing-coverts, &c. are barred with lake; in the latter these parts are uniform white, tinged with rose, as in the bird from Fashoda. To satisfactorily settle this interesting point (which, so far as I am aware, has never previously been suggested), it would be necessary to examine a few adult birds shot in different months of the year and properly labelled. Mr. Hawker's bird is the only specimen in the British Museum with a label bearing the *date* and other particulars.

It is to be hoped that collectors in Africa will look more closely into this matter.

[I saw the Wood-Ibis in flocks, generally feeding in places which had just been burnt.—R. M. H.]

145. IBIS ÆTHIOPICA.

Ibis æthiopica (Lath.) ; Witherby, p. 271 ; Grant & Reid, p. 686.

a. ♂. El-Kawa, 19th May. No. 526.

Iris hazel ; bill, legs, and feet black.

[The Sacred Ibis was fairly common.—R. M. H.]

146. PLEGADIS FALCINELLUS.

Plegadis falcinellus (Linn.) ; Witherby, p. 271 ; Grant & Reid, p. 686.

a, b. ♂. Jebel Ain, 11th February. Nos. 49, 50.

Iris dark hazel ; bill, legs, and feet black.

[The Glossy Ibis was distributed all along the river, but was not very plentiful.—R. M. H.]

147. HAGEDASHIA HAGEDASH.

Hagedashia hagedash (Lath.) ; Grant, Ibis, 1900, p. 325 ; Witherby, p. 271.

a. ♂. Kawa, 19th May. No. 527.

Iris hazel, with an outer ring of pearly white ; bill black, vinaceous on the culmen ; legs and feet black, red on the upper surface of the toes.

[The Hadadah Ibis was common along the river. When disturbed it makes a great noise, which sounds like "Whā-hā-hā." At night it roosts in trees in company with Egrets and Herons.—R. M. H.]

148. PLATALEA LEUCORODIA.

Platalea leucorodia (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 44 (1898) ; N. C. Roths. & Wollast. p. 30.

a. Imm. Ed-Duem, 25th May.

An immature specimen of the Spoonbill, with the two outer primary-quills largely brownish black, the third, fourth, and eighth to tenth quills tipped with the same colour, and all with dark shafts.

149. PLATALEA ALBA.

Platalea alba Scop. ; Witherby, p. 271 ; Grant & Reid, p. 686.

a, b. ♀. Ed-Duem, 25th May. Nos. 572 & 573.

These two fine adult females of the African Spoonbill have the iris pearly white, the bill blue-grey clouded with pink and margined with a pink border crenulated on the inner edge, the bare skin on the face and throat pink, darker on the forehead, and the legs and feet whitish pink.

150. *ARDEA PURPUREA.

Phoxy purpurea (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 60 (1898) ; Witherby, p. 272.

[The Purple Heron was fairly common.—R. M. H.]

151. ARDEA GOLIATH.

Ardea goliath Cretzschm. ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 66 (1898).

a. ♂. Kaka, 7th May. No. 459.

Iris yellow ; bill dusky, paler below ; legs and feet greyish black.

[The Giant Heron was very common, and was always observed singly. It may sometimes be seen standing in a curious attitude with the tips of its wings crossed in front of its feet.—R. M. H.]

152. ARDEA MELANOCEPHALA.

Ardea melanocephala Vig. & Childr. ; Grant, Ibis, 1900, p. 325.

a. ♂. Kaka, 8th March. No. 121.

b. ♂. Fashoda, 30th March. No. 254.

Iris straw-coloured ; bill dark greyish black, lighter at the base and on the under mandible ; bare skin below the eyes with a greenish tint, yellowish from eye to nostril ; legs black, with a faint vinaceous tint on the back of the tarsus.

[The Great Black-headed Heron was fairly common and generally solitary in its habits. The stomach of No. 254 contained two rats, remains of coleoptera, and a parasitic worm.—R. M. H.]

153. *ARDEA CINEREA.

Ardea cinerea Linn. ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 74 (1898) ; Witherby, p. 272.

[The Common Heron was plentiful along the khors.—R. M. H.]

154. MESOPHOYX BRACHYRHYNCHA.

Mesophoyx brachyrhyncha (Brehm) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 87 (1898) ; Grant, Ibis, 1901, p. 295.

a. ♀. Fashoda, 31st March. No. 265.

Iris yellow ; bill yellow ; bare skin in front of eyes pale green ; legs and feet black.

This female is perhaps not fully adult, the ornamental plumes of the back measuring only about nine inches (in the adult male they attain twice that length), and the bare portions of the tibio-tarsi being black, with merely indications of yellowish where the feathering begins.

[The Short-billed Egret is fairly common.—R. M. H.]

155. HERODIAS ALBA.

Herodias alba (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 90 (1898) ; Witherby, p. 272 ; N. C. Roths. & Wollast. p. 29.

a. ♂. Kaka, 5th March. No. 111.

b. ♂. El-Kawa, 19th May. No. 528.

Of these two examples of the Great White Egret one (spec. a) is in full breeding-dress, with the dorsal plumes fully developed, the other (spec. b) in somewhat worn condition, many of the long plumes having already been cast. Both have the iris pale straw-coloured, the bill ochreous yellow, the bare skin round the eyes pale green, and the legs and feet black. According to the 'Catalogue of Birds' (xxvi. p. 92), the bill is black in the breeding-plumage, yellow in winter.

156. NYCTICORAX NYCTICORAX.

Nycticorax nycticorax (Linn.) ; Grant & Reid, p. 687.

Nycticorax griseus (Linn.) ; N. C. Roths. & Wollast. p. 29.

a. ♀ imm. Fashoda, 30th March. No. 253.

Iris yellow ; bill dusky, greenish at base ; bare skin in front of eyes green ; legs and feet green.

[I saw several colonies of the Night-Heron, and found the birds very shy.—R. M. H.]

157. ARDEOLA RALLOIDES.

Ardeola ralloides (Scop.) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 202 (1898).

Herodias ralloides (Scop.) ; Witherby, p. 271.

a. ♀. Fashoda, 21st March. No. 152.

A female Squacco Heron has the iris pale straw-coloured, the bill greyish yellow, the legs and feet olivaceous, the hinder part of the metatarsus and the soles of the feet yellow.

158. BUBULCUS LUCIDUS.

Bubulcus lucidus (Raf.) ; Grant & Reid, p. 687 ; N. C. Roths. & Wollast. p. 29.

Herodias bubulcus (Aud.) ; Witherby, p. 272.

a-c. ♀ et ♂ imm. Kawa, 20th May. Nos. 529-531.

Iris yellow ; bill and toes yellow ; tibiae greenish-yellow, shading into dusky on the lower part of the tarsi and feet.

[I saw the Buff-backed Heron in small flocks. It is fairly common along the river.—R. M. H.]

159. *ARDETTA MINUTA.

Ardetta minuta (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxvi. p. 222 (1898) ; Witherby, p. 272.

[The Little Bittern was not common south of El-Kawa. I saw one pair near Kaka.—R. M. H.]

160. *GRUS GRUS.

Grus grus (Linn.) ; Grant, Ibis, 1901, p. 293.

Grus cinerea Bechst. ; Witherby, p. 277.

[Cranes were common in February between Ed-Duem and El-Kawa ; but I saw none on my return in May.—R. M. H.]

161. BALEARICA PAVONINA.

Balearica pavonina (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxiii. p. 272 (1894) ; Witherby, p. 276.

a, b. ♂ ♀. Fashoda, 22nd March. Nos. 174 & 175.

[This Crowned Crane was very numerous. It roosts in pairs, and, though generally one of the last birds to retire, starts off for its feeding-grounds just before dawn. It has a very aggravating cry, which sounds something like "go wack."—R. M. H.]

162. *EUPODOTIS KORI*.

Eupodotis kori Burch. ; Grant & Reid, p. 688.

a. ♀. Renk, 9th May. No. 460.

Iris hazel ; bill greyish ; legs and feet greyish white.

[The Kori Bustard was very wild and not very plentiful.—
R. M. H.]

163. *LISSOTIS HARTLAUBI*.

Lissotis hartlaubi (Heugl.) ; Sharpe, Cat. B. Brit. Mus.
x xiii. p. 307 (1894).

a, b. ♂ ♀. Fashoda, 21st March. Nos. 158 & 159.

c. Pull. Kaka, 8th May. No. 448.

Iris hazel ; bill horn-coloured, darker along the culmen ;
legs and feet greyish white.

[I saw Hartlaub's Bustard in pairs. It was evidently
breeding, as I found two very young birds of this species.
—R. M. H.]

The British Museum contains examples from the follow-
ing localities :—Somaliland (*Hawker*) ; Fashoda (*Hawker*) ;
Kilimanjaro (*Hunter & Kenrick*) ; Machakos (*Hinde*) ;
South Africa (*Mitchell*).

Hab. Somaliland to the Valley of the White Nile, ranging
southward to British East Africa, and possibly to South
Africa.

164. *LISSOTIS LOVATI*. (Plate XI.)

Lissotis lovati Grant ; Grant & Reid, p. 688.

a, b. ♂ ♀. 20 miles N. of Fashoda, 16th April. Nos.
370, 371.

Iris hazel ; bill horn-coloured, darker along the culmen ;
legs and feet greyish white.

[I found Lovat's Bustard and *L. hartlaubi* in the same
district. They were not numerous and were seen in pairs.
—R. M. H.]

Dr. Reichenow (Vög. Afr. i. pt. 1, p. 257) has united the
present species with *L. melanogaster* Rüpp.

We have now a series of thirteen specimens of *L. lovati*,
and there can be no doubt that it is a perfectly well-

Fig. 10.

Wing of *Lissotis lorati*.

Fig. 11.




Wing of *Lissotis melanogaster*.

characterized species, quite distinct from *L. melanogaster*, of which we have now eighteen specimens.

In the *adult male* of *L. lovati* (fig. 10, p. 454) the primaries (except the first long flight-feathers) are mostly white, the outer quills being tipped with black, while two or three of the innermost are pure white at the tips. The secondaries have the basal three-fourths or three-fifths of the outer web pure white, while the greater secondary upper wing-coverts are similarly coloured, producing a uniform white band across the wing when closed.

The *young male* of *L. lovati* has the primary-quills less white than those of the adult, while the outer webs of the secondaries have the basal three-fifths white widely barred with black.

In the *adult male* of *L. melanogaster* (fig. 11, p. 455) the predominating colour of the primaries is black, the inner webs of the quills being largely marked with white on the basal two-thirds. The secondaries are black, with one, or sometimes two, moderately wide bars or spots of white across the middle of the outer web; and the greater secondary upper wing-coverts are transversely marked with -shaped black bars.

The *young male* of *L. melanogaster* has the primary-quills whiter than those of the adult, and the white bars on the black outer webs of the secondaries somewhat wider, more irregular, and mottled with buff.

The geographical distribution of the two species is, moreover, quite distinct. The British Museum contains examples from the following localities:—

Lissotis lovati.

Abyssinia (*Rüppell*); Bilo (*Blundell & Lovat*), Sequala and Aila, S. Abyssinia (*Pease*); N. of Fashoda (*Hawker*); Bahr-el-Ghazal (*Flower*); Redjaf (*Emin*); Lake Nakuru (*Ansorge*) and Kitwi, B. E. Africa (*Crawshay*).

Hab. Abyssinia, westward to the Valley of the White Nile, south to Equatorial Africa, and ranging thence to British East Africa.

Lissotis melanogaster.

British East Africa, Ravine, Mau (*Johnston*); Machakos (*Hinde*); Nyasaland (*White*); Mozambique (*Churchill*); Transvaal (*Ayres*); Durban (*Gordge*); Ambriz (*Monteiro*); Accra (*Buckley, Shelley, Smith, Ussher*).

Hab. British East Africa to South Africa, and thence northwards on the West Coast to Angola, the Gold Coast, and Senegambia.

165. *ÆDICNEMUS SENEGALENSIS.*

Ædicnemus senegalensis Swains.; Grant, Ibis, 1900, p. 327; Witherby, p. 277; N. C. Roths. & Wollast. p. 32; Oates, Cat. Eggs Brit. Mus. ii. pp. 82, 363 (1902).

a. ♀. 20 miles N. of Fashoda, 19th March. No. 150.

b. ♂. Near Renk, 13th May. No. 471.

Iris dark straw-coloured or yellow, granulated or veined with black on the outer edge; orbits yellow; bill black, greenish yellow at the base; legs and feet greenish grey or pale green.

[The Senegal Thick-knee was not a very common bird. We obtained a clutch of two eggs about 20 miles to the north of Fashoda.—R. M. H.]

166. *PLUVIANUS ÆGYPTIUS.*

Pluvianus aegyptius (Linn.); Grant, Ibis, 1900, p. 327; Witherby, p. 278; N. C. Roths. & Wollast. p. 33; Oates, Cat. Eggs Brit. Mus. ii. pp. 74, 361 (1902).

a. ♀. 20 miles N. of Fashoda, 19th March. No. 145.

b, c. ♂ ♀. Fashoda, 31st March. Nos. 259, 260.

Iris dark hazel; bill black; legs and feet blue.

[The Crocodile-bird was nowhere very numerous, but we managed to obtain a clutch of eggs. I had searched one small islet without finding any sign of them, and was engaged in searching another, when Mr. Cheetham called to me that he had found the eggs on the first islet. He had watched the birds through a glass from some distance after I had left, and had seen one of them scratch away the sand and sit down. He went to the place and found three eggs under the sand, the bird having again covered them before he got to the spot.—R. M. H.]

167. *GLAREOLA PRATINCOLA*.

Glareola pratincola (Linn.); Sharpe, Cat. B. Brit. Mus. xxiv. p. 53 (1896); Witherby, p. 278.

a-d. ♂ ♀. Kaka, 3rd March. Nos. 101, 103-105.

Iris hazel; bill black, crimson at gape; legs and feet black.

[The Pratincole was fairly common, and generally seen in huge flocks on the islets of the White Nile. These flocks have a curious habit of rising and going through evolutions in the air, mounting up to a great height in a spiral. When I first saw one of these living spirals I thought that it was a "dust-devil" gone up to a great height, until I looked at it through a telescope. After the spiral manœuvre, the birds split up into several flocks and separate in different directions, eventually settling once more on an islet in the river.—R. M. H.]

168. *PHYLLOPEZUS AFRICANUS*.

Phyllopezus africanus (Gmel.); Grant & Reid, p. 689.

a. Ad. Kaka, 28th Feb. No. 79.

b-d. ♂ et ♀ imm. 20 miles N. of Fashoda, 19th Mar.-6th Apr. Nos. 142, 143, & 300.

Iris hazel; bill bluish grey on frontal plate, bluer on actual bill, and shading into dusky at the tip; legs and feet olive-brown.

[This Jacana was common along the banks of the river and the khors south of Abba Island.—R. M. H.]

Referring to the 'Catalogue of Birds' (xxiv. p. 68), I find that some error has crept in there, for the characters ascribed to *Phyllopezus* are not applicable either to *P. africanus* or *P. albinucha*, both of which possess a large flat shield attached posteriorly to the crown.

169. *MICROPARRA CAPENSIS*.

Microparra capensis (Smith); Sharpe, Cat. B. Brit. Mus. xxiv. p. 89 (1896).

a. ♂ imm. Fashoda, 31st March. No. 263.

Iris brown; bill olivaceous, darker at the tip; legs and feet olivaceous.

An immature bird with the crown of the head dull brown,

the rump blackish brown, and the tail white barred with black and slightly marked with chestnut.

The occurrence of this species at Fashoda extends its known range a long way to the north. Previously it had not been found further in that direction than Lake Naivasha in British East Africa.

[I only saw a single specimen of this little Jacana. It rose out of a khor along with several individuals of the larger African species.—R. M. H.]

170. *LOBIVANELLUS SENEGALLUS*.

Lobivanellus senegallus Linn.; Grant, Ibis, 1900, p. 328.

a, b. ♂. Fashoda, 29th March. Nos. 236, 237.

Iris yellow, granulated and veined with black; wattles bright yellow, red at the upper extremity; bill ochreous, black at tip; legs and feet ashen green.

The Senegal Wattled Lapwing was not procured either by Mr. Witherby or by Messrs. Rothschild and Wollaston.

171. *HOPLOPTERUS SPINOSUS*.

Hoplopterus spinosus (Linn.); Witherby, p. 277; Grant & Reid, p. 690; N. C. Roths. & Wollast. p. 32; Oates, Cat. Eggs Brit. Mus. ii. pp. 12, 345 (1902).

a, b. ♂. Kaka, 25th Feb. & 5th March. Nos. 72 & 106.

Iris crimson; bill, legs, and feet black.

[The Egyptian Spur-winged Plover was common.—R. M. H.]

172. *CHETTUSIA LEUCURA*.

Eurypterus leucurus (Licht.); Sharpe, Cat. B. Brit. Mus. xxiv. p. 171 (1896).

Euhyas leucura (Licht.); Sharpe, Cat. B. Brit. Mus. xxiv. pp. x, 736 (1896).

a-e. ♀. Omdurman, 2nd Feb. Nos. 25–29.

Iris light brown; bill black; legs and feet gamboge-yellow.

It should be noted that the White-tailed Plover has the front of the metatarsus covered with transverse scales, and should therefore come under the heading *Lobivanellinae* (cf. Cat. B. Brit. Mus. xxiv. p. 90). I do not, however, believe that the scaling of the tarsus is of much value as a subfamily character.

173. *OCHTHODROMUS ASIATICUS*.

Ochthodromus asiaticus (Pall.); Witherby, p. 277; Grant & Reid, p. 691.

a, b. ♂ ♀ imm. Khartum, 23rd & 25th Jan. Nos. 2 & 6.

Iris dark hazel; bill black; legs and feet olivaceous or ochreous.

Two specimens of the Caspian Sand-Plover in immature plumage were procured.

174. *ÆGIALITIS HIATICOLA*.

Ægialitis hiaticola (Linn.); Sharpe, Cat. B. Brit. Mus. xxiv. p. 256 (1896).

Ægialitis hiaticula (Linn.); Witherby, p. 277.

a. ♀. Fashoda, 21st March. No. 154.

A Ringed Plover in winter plumage has the iris brown, the bill black, yellow at the base, the legs and feet orange.

175. *ÆGIALITIS DUBIA*.

Ægialitis dubia Scop.; Grant & Reid, p. 692.

a, b. ♂ ♀. Fashoda, 29th March. Nos. 230 & 242.

Iris dark hazel; bill black, ochreous at base in the female; legs and feet ochreous yellow.

A pair of Little Ringed Plovers were in full breeding-plumage on the 29th of March.

176. *ÆGIALITIS PECUARIA*.

Ægialitis pecuaria (Temm.); Sharpe, Cat. B. Brit. Mus. xxiv. p. 297 (1896).

a-c. ♂. Kaka, 8th March. Nos. 117-119.

Iris dark hazel; bill black; legs and feet ochreous yellow.

Of the three males of Kittlitz's Sand-Plover shot at Kaka, two have the wing-measurement 3·8 inches, and all the primary-quills partially white-shafted except the third; the third specimen has the wing 4·05 inches in length, and *only the first* primary-quill white-shafted. The last agrees with the birds from Cape Colony noted by Dr. Sharpe (*op. cit.* p. 299). This difference may be due to age.

177. *HIMANTOPUS HIMANTOPUS*.

Himantopus himantopus Linn.; Grant & Reid, p. 691.

Himantopus candidus Bonn.; Witherby, p. 277.

a, b. ♂. Kaka, 25th Feb. & 8th March. Nos. 71 & 116.

Iris black, with narrow scarlet border; bill black; legs and feet bright pink.

These males of the Black-winged Stilt, with the hinder part of the crown, feathers surrounding the eye, and ear-coverts blackish grey, are apparently fully adult birds in winter plumage.

178. *RECURVIROSTRA AVOCETTA.*

Recurvirostra avocetta Linn.; Sharpe, Cat. B. Brit. Mus. xxiv. p. 326 (1896).

a. ♀ vix ad. Fashoda, 22nd March. No. 167.

A nearly adult Avocet has the iris hazel, the bill black, the legs bluish grey, and the feet ochreous.

179. *NUMENIUS ARQUATA.*

Numenius arquata (Linn.); Sharpe, Cat. B. Brit. Mus. xxiv. p. 341 (1896); Witherby, p. 277.

a. ♀. Ed-Duem, 21st May. No. 534.

Iris hazel; bill black, lighter at the base of the lower mandible; legs and feet slaty blue.

This female Curlew has an abnormally long bill, measuring 6·8 inches.

180. *LIMOSA LIMOSA.*

Limosa limosa (Linn.); Grant & Reid, p. 691.

Limosa belgica (Gmel.); Witherby, p. 277.

a. ♀. Khartum, 26th Jan. No. 23.

b. ♀. Fashoda, 31st March. No. 268.

c. ♀. Ed-Duem, 23rd May. No. 567.

Iris hazel; bill flesh-coloured, dusky or blackish at the tip; legs and feet black.

Though these three Black-tailed Godwits are all marked as females, I am inclined to think that specimens *b* and *c* may have been wrongly determined. In both of these the bill measures about 3·8 inches, while in specimen *a* it measures 4·7.

181. *TOTANUS CALIDRIS.*

Totanus calidris (Linn.); Witherby, p. 277; Grant & Reid, p. 693.

a. ♂. Ed-Duem, 23rd May. No. 562.

An immature male Redshank in very worn plumage has the iris hazel, the bill dusky, paler below, and the legs and feet red.

182. *TOTANUS STAGNATILIS*.

Totanus stagnatilis Bechst.; Grant & Reid, p. 693.

a-c. ♂ ♀. Kaka, 8th March. Nos. 113–115.

d, e. ♂ ♀. Fashoda, 26th & 30th March. Nos. 188 & 256.

Iris dark hazel; bill black; legs and feet pale olivaceous.

The Marsh-Sandpipers are in various stages of summer plumage, those shot at the end of March having practically completed the change.

183. *HELODROMAS OCHROPUS*.

Helodromas ochropus (Temm.); Grant & Reid, p. 692.

a. ♀. Fashoda, 29th March. No. 235.

A Green Sandpiper in breeding-plumage has the iris hazel, the bill black, and the legs and feet olivaceous.

184. *TRINGOIDES HYPOLEUCUS*.

Tringoides hypoleucus (Linn.); Grant & Reid, p. 692.

a. ♀ vix ad. Kaka, 5th March. No. 110.

A nearly adult Common Sandpiper has the iris hazel, the bill black, lighter at the base of the lower mandible, and the legs and feet olivaceous.

185. *GLOTTIS NEBULARIUS*.

Glottis nebularius (Gunn.); Grant, Ibis, 1900, p. 328.

a. ♂. Kaka, 3rd March. No. 100.

A Greenshank in winter plumage has the iris hazel, the bill black, brownish at the base of the lower mandible, and the legs and feet ashen green.

186. *PAVONCELLA PUGNAX*.

Pavoncella pugnax (Linn.); Grant & Reid, p. 693.

Machetes pugnax (Linn.); Witherby, p. 277.

a-g. ♂ ♀. Khartum, 24th–25th Jan. Nos. 2, 3, 4, 5, & 8.

h. ♀. Jebel Ahmed-Agha, 19th Feb. No. 59.

Iris dark hazel; bill black, dark flesh-coloured at the base in the males; legs and feet orange-yellow.

Two Ruffs, specimens *c* (No. 4) and *d* (No. 5), killed on

24th Jan., are remarkable : the former has the entire head and neck pure white, the latter has a white ring round the neck. Whether these birds are partial albinos in their ordinary winter plumage or males of the *white type* beginning to assume their summer plumage seems uncertain, but I am inclined to believe the former suggestion to be correct.

187. *TRINGA MINUTA*.

Tringa minuta Leisl. ; Witherby, p. 277.

a. ♀. Khartum, 26th January. No. 22.

b, c. ♀. Omdurman, 2nd Feb. Nos. 30 & 31.

Iris dark hazel ; legs and feet black.

The Little Stints are all in full winter plumage.

188. *TRINGA SUBARQUATA*.

Tringa subarquata (Güld.) ; Grant & Reid, p. 693.

a, b. ♂ ♀. Goz-Abu-Gumar, 19th May. Nos. 515 & 516.

Iris hazel ; bill and legs black.

A pair of Curlew-Sandpipers are in full breeding-plumage.

189. **GALLINAGO GALLINULA*.

Gallinago gallinula, Grant & Reid, p. 693.

[I shot a Jack-Snipe near Fashoda in April. It was very fat, and was the only one that I saw.—R. M. H.]

190. *GALLINAGO GALLINAGO*.

Gallinago gallinago (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxiv. p. 633 (1896).

a. ♂. Fashoda, 22nd March. No. 166.

A Snipe has the iris hazel, the bill dark grey, lighter at the base, and the legs and feet dark brown, greyish on the tarsi.

191. *ROSTRATULA CAPENSIS*.

Rostratula capensis (Linn.) ; Sharpe, Cat. B. Brit. Mus. xxiv. p. 683 (1896).

a, b. ♂. Fashoda, 31st March. Nos. 261 & 262.

Two male Painted Snipes have the iris hazel, the bill dusky, paler below, and the legs and feet dusky.

192. HYDROPROGNE CASPIA.

Hydroprogne caspia (Pall.) ; Saunders, Cat. B. Brit. Mus. xxv. p. 32 (1896).

Sterna caspia Pall. ; N. C. Roths. & Wollast. p. 30.

[I saw the Caspian Tern near Khartum and also up the White Nile, but it was not observed south of Abba Island.—R. M. H.]

193. HYDROCHELIDON LEUCOPTERA.

Hydrochelidon leucoptera (Schinz) ; Grant, Ibis, 1900, p. 330 ; Witherby, p. 274.

a. ♀. Kaka, 28th April. No. 407.

b. ? Goz-Abu-Gumar, 19th May. No. 514.

Specimen *a* of the White-winged Black Tern has partially attained the black summer plumage, while in *b* the change is complete. Both have the iris hazel, the bill black, and the legs dark red.

194. *HYDROCHELIDON NIGRA.

Hydrochelidon nigra (Linn.) ; Saunders, Cat. B. Brit. Mus. xxv. p. 17 (1896) ; Witherby, p. 274.

[Both *Hydrochelidon leucoptera* and *H. nigra* were common about Omdurman and as far south as Goz-Abu-Gumar.—R. M. H.]

195. GELOCHELIDON ANGLICA.

Gelochelidon anglica (Mont.) ; Grant & Reid, p. 694 ; N. C. Roths. & Wollast. p. 30.

Sterna anglica Mont. ; Witherby, p. 274.

a. ♂. Ed-Duem, 22nd May. No. 538.

The Gull-billed Tern has the iris dark hazel, the bill black, and the legs and feet brownish black.

196. *RHYNCHOPS FLAVIROSTRIS.

Rhynchops flavirostris Vieill. ; Saunders, Cat. B. Brit. Mus. xxv. p. 158 (1896).

[Scissor-billed Terns were not very common, and I never noticed them north of Abba Island.—R. M. H.]

197. *LARUS FUSCUS.

Larus fuscus Saunders, Cat. B. Brit. Mus. xxv. p. 250 (1896) ; Witherby, p. 274.

[I only saw one Lesser Black-backed Gull, near Ed-Duem.
—R. M. H.]

198. *LIMNOCORAX NIGER*.

Limnecorax niger (Gmel.) ; Grant & Reid, p. 694.

a, b. ♂ et ♂ imm. Kaka, 7th May. Nos. 444 & 445.

c, d. ♂ imm. Kaka, 18th April.

Iris crimson; bill greenish chrome; upper portion of eyelid coral-red; legs and feet dusky red, brighter at and above the tibio-tarsal joint.

[I only saw a few individuals of the Black Rail. Several times I heard it utter its cry in the flags, but could not flush it. Mr. Loat kindly gave me two skins which he had procured.—R. M. H.]

199. *TURTUR DECIPIENS*.

Turtur decipiens Finsch & Hartl. Vög. Ost-Afr. p. 544 (1870); Salvad. Cat. B. Brit. Mus. xxi. p. 420 (1893); N. C. Roths. & Wollast. p. 25.

Turtur ambiguus Bocage, Orn. Angola, p. 386 (1877); Salvad. Cat. B. Brit. Mus. xxi. p. 419 (1893); Witherby, p. 266.

a. ♂. Fashoda, 30th March. No. 255.

b. ♂. El-Kawa, 20th May. No. 525.

c-e. ♂ ♀. Ed-Duem, 22nd May. Nos. 542, 543, 559.

Iris yellow; bill vinaceous; legs and feet pinkish.

I think there can be no doubt that *T. decipiens* and *T. ambiguus* are synonymous. Mr. Witherby and Messrs. Rothschild and Wollaston have pointed out certain differences in the length of the wing and the width of the white tips to the tail-feathers, but, as will be seen by the following measurements, these characters appear to be sexual, not specific.

The specimen from Argo Island, Dongola (one of the types of *Columba collaris* Hempr. & Ehr.), which Count Salvadori in the 'Catalogue of Birds' refers to *C. decipiens*, appears to me to be an unusually rufous specimen of the bird that he calls *T. ambiguus*. It is in worn plumage, and

the unusually rufous tinge may be merely the result of weathering.

Sex.	Wing.	Extent of white on tail (seen from below).		Sex.	Wing.	Extent of white on tail (seen from below).	
		in.	in.			in.	in.
♂. Fashoda	6·8		2·6	♀. Ed-Duem	6·4		2·3
♂. Shendi	6·8		2·5	♀. Sobat	6·4		2·0
♂. El-Kawa	6·7		2·5	♀. Bahr Serhaf	6·4		2·0
♂ [sexed ♀] †. Shendi	6·7		2·4	♀. Tette	6·4		1·9
♂. Argo I., Dongola	6·7		2·4	♀. Tette	6·4		1·9
♂. Ed-Duem	6·6		2·2	♀. Famaka	6·3		2·1
♂. Ed-Duem	6·6		2·1				

[This species was very common indeed. Mr. Loat gave me a nest and eggs.—R. M. H.]

200. TURTUR TURTUR.

Turtur turtur (Linn.); Salvad. Cat. B. Brit. Mus. xxi. p. 396 (1893); N. C. Roths. & Wollast. p. 24.

Turtur communis Selby; Witherby, p. 266.

a. ♀. Ed-Duem, 22nd May. No. 555.

Iris hazel; bill black; legs vinaceous.

[The Common Turtle-Dove was very numerous.—R. M. H.]

201. TURTUR ROSEOGRISEUS.

Turtur roseogriseus (Sundev.); Grant, Novit. Zool. vii. p. 272 (1900); Witherby, p. 267; N. C. Roths. & Wollast. p. 25.

a. ♂ imm. Ed-Duem, 22nd May. No. 557.

Iris crimson; bill black; legs vinaceous.

[We found the Rose-grey Turtle-Dove much wilder and faster on the wing than *T. ambiguus*.—R. M. H.]

202. TURTUR SENEGALENSIS.

Turtur senegalensis (Linn.); Witherby, p. 267; Grant & Reid, p. 696; N. C. Roths. & Wollast. p. 26.

a. ♀. Kaka, 5th May. No. 436.

† I feel sure that the sex of this bird from Shendi has been wrongly determined.

b-d. ♂ ♀. Ed-Duem, 22nd & 23rd May. Nos. 544, 558, 565.

Iris hazel; bill black; legs and feet vinaceous.

[The Senegal Turtle-Dove was fairly common.—R. M. H.]

203. *CHALCOPELIA AFRA*.

Chalcopelia afra (Linn.); Witherby, p. 267; Grant & Reid, p. 697.

a. ♀. Kaka, 23rd April. No. 394.

b. Ad. Renk, 12th May. No. 467.

c, d. ♂ ♀. Goz-Abu-Gumar, 19th May. Nos. 498, 524.

e. ♂. Ed-Duem, 22nd May. No. 554.

Iris hazel; bill black in male, dusky in female; legs and feet vinaceous.

[The Metallic Spotted Dove is a very strong flyer. We found it common about Abba Island.—R. M. H.]

204. *ÆNA CAPENSIS*.

Æna capensis Linn.; Witherby, p. 267; Grant & Reid, p. 696; R. C. Roths. & Wollast. p. 26.

a. ♂. Fashoda, 1st April. No. 274.

Iris hazel; bill vinaceous, brownish at the tip; legs and feet vinaceous.

[The Long-tailed African Dove was very common south of Ed-Duem. I found it nesting in a garden at Khartum.—R. M. H.]

205. *PTEROCLURUS EXUSTUS*.

Pteroclorus exustus (Temm.); Witherby, p. 275; Grant, Ibis, 1901, p. 298; id. & Reid, p. 697.

Pterocles exustus Temm.; N. C. Roths. & Wollast. p. 31.

a, b. ♂ ♀. Ed-Duem, 22nd May. Nos. 535, 536.

Iris hazel; bill yellowish grey; feet yellowish white.

[We found the Common Pin-tailed Sand-Grouse very abundant from Khartum as far south as Ed-Duem.—R. M. H.]

206. *PTEROCLES QUADRICINCTUS*.

Pterocles quadricinctus Temm.; Grant, Ibis, 1900, p. 334.

a, b. ♂ ♀. Renk, 12th May. Nos. 469, 470.

Iris hazel; bill, legs, and feet reddish horn-coloured.

[I found the African Painted Sand-Grouse on the edge of the scrub near the river. I never noticed it south of Renk or north of Ed-Duem.—R. M. H.]

207. *FRANCOLINUS GEDGII*.

Francolinus gedgii Grant; Grant, Cat. B. Brit. Mus. xxii. p. 163 (1893).

Francolinus clappertoni, Reich. Vög. Afr. i. p. 480 (1901) [part., Lado, *Emin*].

a, b. ♂ ♀. 20 miles N. of Fashoda, 16th April. Nos. 365, 366.

Iris hazel; bill blackish horn-coloured, red at the base; bare skin surrounding eye red; legs purplish brown in front, red behind, paler in the female.

[Only one party of Gedge's Francolin was seen, near Fashoda.—R. M. H.]

The type of this species, an adult male, was obtained by Mr. E. Gedge on the Elgon Plains in 1890. It was not until last year that a female was shot by Capt. H. Bray at the junction of the Sobat River with the White Nile, and forwarded to the Museum. Lastly, Mr. Hawker secured a fine adult pair in freshly-moulted plumage a little further north.

The three birds from Fashoda and the mouth of the Sobat resemble one another and differ slightly from the type of *F. gedgii* in having the general colour of the lower back and rump greyish brown instead of dull olive-brown; the white margins to the feathers of the upper parts, which are confined to the sides of the feathers in the type, are sometimes almost confluent round the tip in the White Nile birds, which in this respect approach the allied *F. clappertoni*; the under-parts are nearly white, faintly tinged with buff on the breast only.

The differences are, however, very slight and may be individual; in any case, without more material it would be unsafe to separate the birds.

Fashoda is probably the northern limit of this species, its place being taken in Kordofan by the allied *F. clappertoni*.

I find that the two males procured by Dr. Ansorge in

Uganda and Unyoro, and referred to *F. gedgii* by Mr. Hartert (cf. Ansorge, Under Afr. Sun, App. p. 330), belong to *F. icterorhynchus* Heugl.

208. *FRANCOLINUS CLAPPERTONI*.

Francolinus clappertoni Childr. ; Grant, Cat. B. Brit. Mus. xxii. p. 162 (1893).

a, b. ♂ et ♂ vix ad. Goz-Abu-Gumar, 17th May. Nos. 488 & 489.

Iris hazel; bill blackish horn-coloured, red at the base; naked skin round eye red; legs purplish brown in front, red behind.

These two males in freshly-moulted plumage agree perfectly with the type specimen, which was obtained in Bornu, and with a female procured by Petherick in Kordofan.

F. clappertoni may be distinguished from *F. gedgii* at a glance by the reddish and light olive-brown colour of the upper parts; moreover in the present species the forehead is black and the top of the head dull reddish brown, while in *F. gedgii* the whole forehead and crown are brownish black, somewhat paler towards the nape.

[I saw only one covey of Clapperton's Francolin, south of Goz-Abu-Gumar.—R. M. H.]

209. **COTURNIX COTURNIX*.

Coturnix coturnix (Linn.) ; Roths. & Wollast. p. 32.

[The Quail was twice met with singly.—R. M. H.]

210. *NUMIDA PTILORHYNCHA*.

Numida ptilorhyncha Licht. ; Grant, Ibis, 1900, p. 336 ; Witherby, p. 276.

a-c. ♂ ♀. Kaka, 23rd Feb.-25th March. Nos. 66, 67, & 74.

Iris hazel; bill whitish horn-coloured, with a reddish patch at the base; bare skin at the back of the skull purplish black, paler on the throat; wattles and spots round the ears pale blue, shading into greyish on the margins of the wattles; legs and feet black.

[We found the Abyssinian Helmeted Guinea-fowl in

large flocks all along the river, to which they come to drink, and noticed them feeding in the grass about fifteen miles from water. The Guinea-fowls shot had the nasal tuft of bristles very small, much smaller than in the specimens I formerly got in Somaliland.—R. M. H.]

The Somaliland bird [*N. somaliensis* Neumann, Orn. MB. vii. p. 25 (1899)], which is in my opinion perfectly distinct from *N. ptilorhyncha*, is united with that species by Reichenow [Vög. Afr. i. p. 445 (1901)].

N. somaliensis is distinguished by having the neck naked, with only a ring of black feathers at the base, and the bristles at the base of the culmen longer and more numerous, forming a much larger bunch than is usually found in *N. ptilorhyncha*. It should, however, be noted that in some examples of the latter species the bristles, though never so long as those of the Somali bird, are as numerous and form quite as large a bunch.

211. *STRUTHIO CAMELUS.

Struthio camelus Linn.; Salvad. Cat. B. Brit. Mus. xxvii. p. 572 (1895).

[I saw Ostriches on several occasions. The authorities at Khartum forbid the destruction of these birds, but the natives hunt them and search assiduously for their eggs. The Dinka women make curious waistbands out of circular pieces of the egg-shell about the size of a shilling, which are bored and strung. These they give to their men-folk, who seem to value them highly.—R. M. H.]

XXVII.—*A List of the Birds of Lucknow.* By WILLIAM JESSE, M.A., F.Z.S., M.B.O.U. (Member of the Bombay Natural History Society).

(Plate XII.)

INTRODUCTION.

IN compiling this list of the species of birds found round the capital of Oudh, I have had the exceptional advantage of being able to utilize the results of the labours of the late

Mr. George Reid. Shortly before his death he gave me permission to make whatever use I liked of his writings. I have taken full advantage of this privilege, and numbers of Mr. Reid's notes will be found incorporated in the following pages.

Following the general custom, I have prefaced my paper with a map of the "old" Lucknow Civil Division (Plate XII.). The present Division is very much larger, but I have retained the old boundaries, because both the late Mr. Reid and I have done the greater part of our collecting within its confines.

The historical associations connected with Lucknow are so great that it seems almost superfluous to explain its position, yet, in order that my remarks may be as complete as possible, I may state that it is situated between $26^{\circ} 6'$ and $27^{\circ} 19'$ North latitude, and between $80^{\circ} 6'$ and $81^{\circ} 80'$ East longitude, with an average height of a little more than 400 feet above sea-level. "The entire length of its south-western frontier is washed by the waters of the sacred Ganges; its north-eastern by the waters of the Gogra, beyond which lie the districts of Gonda and Bahraich; on the north and north-west it is bounded respectively by the districts of Sitapur and Hardoi; while its eastern limits impinge upon the districts of Fyzabad and Sultanpur."

The three districts which make up the "old" Division, and to which alone, with few exceptions, reference is made in these pages, are those of Lucknow proper, Unao, and Barabanki, covering a total area of some 4480 square miles, with a population of roughly 600 to the square mile. The rural population consists principally of Hindus, with a sprinkling of Mahomedans and Thakurs. The Mahomedans are chiefly congregated in the larger towns. In consequence of the dense population the fauna is limited and somewhat artificially distributed. At the time that Reid wrote, the cultivated area was 2520 square miles, the remaining 1960 being taken up by usar plains, dhak-jungle, jheels, groves, and village sites. In the last twenty years, however, much land has been reclaimed and laid under cultivation—excellent, no

doubt, from a political and economic point of view, but disastrous to the sportsman and the naturalist. Even within the last six years I have watched many of my favourite snipe-jheels replaced one by one by "smiling corn-fields," and, doubtless, as time goes on, the area of arable land will increase still further.

"There is not much diversity in the soil. The natives themselves generally divide it into four kinds—goind, domat, matyar, and bhur. Of the area under cultivation 20 per cent. may be put down as goind (highly manured land), 55 as domat (mixed sand and clay), 20 as matyar (heavy clay), and 15 as bhur (sand)." The country, as a whole, is but part of a vast alluvial plain, remarkable for the absence of stone. Kunker, an impure calcareous concretion, very hard and of considerable value as road-metal, occurs in layers and patches, rarely at any great depth, and often appears at the surface in the vicinity of nullahs and jheels. In sinking the wells of the bridge over the Ganges at Cawnpore, however, kunker was met with at a depth of 60 feet. Forming, as the district does, part of the "Garden of India," the soil is very fertile, the principal crops being wheat, barley, millet, Indian corn, gram, sugar-cane, pulse, and oil-seeds. Rice is grown along the edges of rivers, jheels, and in other suitable localities; the tobacco-plant is reared near Lucknow, while the cultivation of opium employs a large number of people, and brings in a considerable revenue to the Government.

The climate, on the whole, is healthy. In the neighbourhood of the big rivers, and towards the Terai, malaria is prevalent during and after the rains, and Lucknow itself has an unpleasant reputation for enteric fever; but beyond that, and an occasional epidemic of cholera, there is nothing much to be feared.

The average rainfall is about 38 inches. During the ten years 1870–79 the average was 41·18 inches, and this in spite of the two years 1876 and 1877, with rainfalls of 23''·67 and 11''·66 respectively. The scantiness of water in 1877, according to Mr. Reid, caused a wonderful change

on the surface of the country ; and, to come to more recent times, the effect of the famine year 1896, when the total only just reached 27", will be permanently shown in the disappearance of a number of jheels, which have since been converted into arable land.

The following details give the rainfall for the past five years :—

	in.
1896	27·10
1897	30·46
1898	45·92
1899	35·33
1900	33·43

[The data for 1901 I have not yet been able to obtain.]

From these figures it will be seen that of recent years the amount of rain experienced has been below what might reasonably have been expected, and, in consequence, many of the water-birds have to a great extent deserted us during the breeding-season.

In order to give a fairly accurate idea of the general climatic conditions of Lucknow, I insert some recorded observations for 1898, which, except for its rather heavy rainfall, may be taken as a typical year :—

Year 1898.	Rainfall.	Thermometer in shade.		Bar.	Humidity.
Months.	Inches.	Max.	Min.	Mean.	Sat.=100.
January	0·	77·6	46·0	29·79	71
February	4·15	73·5	51·5	29·65	75
March	0·01	91·5	58·7	29·65	46
April	0·05	96·6	66·5	29·48	36
May	1·52	106·6	77·6	29·42	43
June	7·77	96·1	79·3	29·32	67
July	9·02	90·6	79·0	29·30	84
August	14·08	88·2	78·0	29·35	85
September	5·42	89·0	73·1	29·49	81
October	3·71	90·0	67·5	29·65	70
November	0·00	81·5	51·7	29·72	73
December	0·19	75·7	49·1	29·77	73

In this table I have not included the highest tempera-

ture in the sun's rays, nor the lowest on the grass, since I have not full data by me; but when I state that the former is sometimes 180° and that the latter sinks to 20° in the cold weather, it will be realized that we are subjected to considerable extremes. The "hot" weather extends from about March 20th till the rains break—towards the end of June. The ten days or so before the monsoon are usually particularly trying, and those who can do so endeavour to take casual leave and make tracks for the nearest hill-station. During the intense heat dust-storms are frequent, and the "loo," or hot west wind, fills the air with sand, causing a lurid haze to obscure the sky. The advent of the monsoon is usually heralded by heavy thunderstorms, and when once the first burst has fallen the temperature drops. So long as it rains, the weather is more or less endurable, in spite of insect plagues and fever, which is always more or less prevalent at this season, but once the clouds clear away and a "break" occurs everything is enveloped in a steam-bath. From November 15th to the beginning of March is the "cold" weather *par excellence*. The climate is delightful, and the nights are cold enough to admit of the collection of pit-ice—though, since the advent of the "machine," that method has fallen into disuse. This is, of course, the shooting-season. Geese, Ducks, and Teal abound on the various stretches of water, while Snipe and myriads of Waders and other water-fowl are found along the edges. Fields and topes swarm with migrants, many of them of surpassing beauty.

The general aspect of the Division is a flat cultivated plain, interspersed with jheels, mangoe-topes, maidans, and nullahs. In some localities there are stretches of dhak (*Butea frondosa*) jungle, very beautiful when in full bloom, intermingled with corounda, in which nilgai, hares, and partridges are to be found. Unfortunately, much of this jungle is disappearing, and with it the game, which of late years has been terribly thinned by the depredations of the lower castes—Chamars, Pasis, Bhatus, and Ahirs. Low-class Mahomedans, native Christians, and Eurasians also slaughter much game indiscriminately for food.

A characteristic of Oudh is its mango-groves (*Mangifera indica*), which are so numerous that they give an appearance of the horizon being bounded by a continuous forest. These groves, being in most cases free from brushwood and undergrowth, harbour no game, but afford cool retreats to man and beast in hot weather.

Another special feature of the Division is the presence of usar plains. These lands, being full of efflorescent salts, rendering them incapable of cultivation, are arid wastes, producing scanty herbage, on which the black-buck (*Antelope cervicapra*) is always to be found. Mr. Reid, in discussing the possibility of utilizing these tracts, says :—"The Arabian date-palm would probably grow on them, and would be an invaluable tree in famine times, as its fruit would not then be, as it usually is, destroyed, when ripening, by excessive rain. It would require some little attention at first, until its long straight root got deep into the soil : after that no tree is more capable of taking care of itself."

It is said that these saline plains encroach on the adjoining arable land, but the increase of the area under cultivation causes me to be sceptical as to the truth of this statement.

The Division is practically a dead level, but towards the Gogra in the north, and the Ganges in the south, there is a gentle, but perceptible, slope.

"These silent highways have much in common. They are more or less fringed with tamarisk [*jhao*] and grass jungles, resorted to by numerous nilgai [*Boselaphus tragocamelus*] and pigs [*Sus indicus*] ; the Gangetic porpoise [*Platanista gangetica*] is found in both ; tortoises and crocodiles [*Crocodilus palustris* and *Gavialis gangeticus*] abound, and, excepting the Black Partridge [*Francolinus vulgaris*], which does not, so far as I know, occur within our limits in the vicinity of the Gogra, the avifauna of the one river is common to both."

I fancy that *Gogra* is here a misprint for *Ganges*, as I found the Black Partridge occurring in the "manjar" or "khadir" at Fyzabad, but I do not know of its being found on the Ganges.

Besides these two, the only river of any importance is

the Goomti, which flows in a well-defined winding channel almost equidistant between them, and is navigable for fairly large country boats. The only other stream of any pretensions is the Sail. There are a few so-called rivers, but none of them are more than monsoon-filled nullahs, which are dry during the hot weather. During the rains, however, some of them assume considerable proportions. "The Kalyani, for instance, in the rain of 1872, was 269 feet broad, where it is crossed by the railway in the Barabanki district, and 33 feet deep, with a velocity of 5.74 miles per hour, and a discharge of 51,540 cubic feet per second." But during the dry weather, with the exception of the four first named, all the so-called rivers are but sun-baked ravines with here and there a stagnant pool.

The cost of irrigating by the waters of these rivers, except the Goomti, is, or is supposed to be, prohibitive, and, in the case of the Ganges, sanctity prevents its being put to all the uses it might. The cultivator gets the bulk of his water from wells, jheels, and tanks, which he trusts the yearly rainfall to fill up for him. Should, therefore, the supply fail, scarcity, if not actual famine, is almost certain to result. These jheels are very numerous, and in many instances are fine expanses of water, which in the cold weather teem with wild-fowl. They are particularly numerous about Mohanlalganj, Sehsindi, Rahimabad, and Itaunja in the Lucknow district; about Ajgaen, in the Unao district; and in the tahsils of Daryabad, Ram Sanahi Ghat, Dewa, and Nawabgunj in the Barabanki district. These jheels are usually situated in the middle of some usar plain surrounded by dhak, grass, or corounda-jungle, though of late years, owing to the destruction of the brushwood, they are of a more open nature than they formerly were.

The dry year of 1877 caused a remarkable change to take place in these jheels, and many have ever since been more or less metamorphosed in character, while their area has in too many instances been contracted. Much of the aquatic flora, moreover, peculiar to these jheels disappeared during the three deficient rainfalls of 1876-78, and has in many instances failed to re-establish itself.

But, as Mr. Reid wrote, "the destruction of the flora would not much matter were it not that the singhara plant has taken its place." The famine of 1877-78 gave an immense impetus to its cultivation, which the famine eighteen years later emphasized. Doubtless from an economic point of view the fact is one for congratulation, but the effect is disastrous from a sportsman's point of view. At all hours of the day the cultivators may be seen wading or floating about on primitive rafts attending to their duties, whilst all night long they sit up and make the night hideous in their endeavours to keep off the Geese. Many a jheel famous in the old days for its enormous bags is thereby rendered useless. In certain years some species of wild-fowl are more numerous than others, and these again may disappear for a time without any apparent cause. Doubtless it is in the main climatic, but the notes that I have collected on the migration of our birds are not sufficient for drawing up any definite conclusions. One strange thing, however, is the scarcity of numerous birds recorded by Reid as "common," e. g. the Glossy Ibis (*Plegadis falcinellus*) and the Common Crane (*Grus communis*), of which I have seen the former once, the latter never; whilst, on the other hand, he has not recorded several species which are now not infrequently met with. It is very difficult to make a proper use of the words "common" and "rare." Often birds are said to be "rare" when they should rather be classed as "local." Thus, though I cannot recollect ever having seen the Flamingo (*Phœnicopterus roseus*), I know that it occurs in considerable numbers on jheels towards Sandila; the Demoiselle Crane (*Anthropoides virgo*) I never saw till last year, when I came upon *hundreds* on some shallow jheels in the Rai Bareli district, and a few days afterwards I saw a flock passing high over Lucknow, evidently going to join their friends. Railways have also exercised a baneful effect on the fauna of the country. There is less virgin ground than there was twenty, fifteen, even ten years ago, and every season sees it diminish still more. A great deal of wanton, or rather I should say irresponsible, slaughter of game, and, in fact, birds and animals generally, is carried on. Much of this destruction

is not immediately apparent, and it is often only by the merest accident that it is discovered. The principal offenders are the lower caste Hindus, Chamars, Pasis, Ahirs, and Bhatus, the Mahomedan shikari, and the poorer classes of Europeans, Eurasians, and native Christians. Numbers of gun licenses are issued in India, nominally to protect the crops; but no one, except the man who will not see, ever supposes that a native fires off shots to scare animals: shouts and yells and hand-clapping do quite as much good, and at a far cheaper rate. Were the gun-barrels for crop-protection reduced to fifteen or eighteen inches, we should have fewer weapons slaughtering the living creatures, male, female, and young without discrimination, in and out of season. It is a matter for congratulation that the Government are shewing signs of awakening to the seriousness of the situation, and are desirous of taking steps before it is too late. Unfortunately, political and pseudo-sentimental reasons are often allowed to stand in the way of reform. The native press has only to hint that the Indian is being unfairly treated to call forth a storm of indignant protest from well-meaning people in England who are totally ignorant of the East and its ways, and are unable to form a proper estimate of the views of both parties. The European is constantly being forbidden to interfere with certain species which the native cherishes, and it does not seem too much to ask that he in his turn should be made to refrain from destroying birds and animals wholesale during the breeding-season.

It now but remains for me to give a list of those birds which Mr. Reid and I have found existing in and around the city of Lucknow. That the list is incomplete I do not for a moment deny, but in extenuation of deficiencies I would remind those who happen to glance at these notes that, not being a Government official, I have no camping opportunities, and, beyond an occasional day or two of shooting on the jheels or maidans, I am rarely able to stay more than a few miles from my bungalow. Under these circumstances I cannot claim to have discovered the occurrence of more than some seventeen or eighteen species in

addition to Reid's original list. The name and number attached to each species is that used in the volumes on 'Birds' by Messrs. Oates and Blanford in the 'Fauna of British India.'

Species marked with an asterisk are those which have not previously been recorded from Lucknow.

List of Species, with Notes.

No. 4. *CORVUS MACRORHYNCHUS.* *Jungle-Crow.*

Kowa; Bara Kowa [H. Lucknow]. Raven [Anglo-Indian].

The Jungle-Crow is very common, though not so numerous as its smaller cousin. It is to be seen almost everywhere, in Civil Lines, Cantonments, round native huts, and far away in the jungle. It breeds from the middle of February to May, the great majority laying in March, and building a compact stick nest, *always*—according to my experience—lined with human or horse hair. In nine cases out of ten the nest is in a mango, and is often well concealed, but I have notes of some in the cork, fir, pepal, and sheshum, and the late Mr. George Reid states that the bird is very fond of tamarind trees. The largest number of eggs that I have ever found is four, and two or three hard-set eggs or young are not uncommon. My earliest dated egg is Feb. 28 and the latest May 7.

The average length of a large number of Lucknow eggs is $1''\cdot74 \times 1''\cdot4$.

Although there is only one species of this Crow in India, yet one cannot help contrasting it with the Himalayan variety—in my opinion a much finer bird than its miserable, bedraggled, half-starved representative in the plains below.

Amongst my papers I find a curious note given me by Mr. J. Spence, one of the Assistant-Masters of La Martinière College. Whilst rowing one evening on the river, this gentleman was attracted by a curious noise, and on turning round saw one of these birds outside a Sand-Martin's hole. Every now and then it would utter a call, and if, as my informant expressed it, any poor little half-fledged Sand-

Martin was fool enough to come to the mouth of the hole to find out what was up, it was promptly seized and devoured.

Mr. A. O. Hume and others state that the Koel sometimes lays its eggs in the nest of this bird ; but I fancy that it rarely does so here, and the Black Cuckoo scarcely ever puts in an appearance much before the end of the second week in April, by which time nearly every Jungle-Crow has hatched its eggs.

No. 7. CORVUS SPLENDENS. *Indian House-Crow.*

Kowa [H. Lucknow].

The House-Crow with its glossy black and grey plumage is too familiar a bird to need any description. It is a general scavenger, aiding the Kites, Vultures, and Jungle-Crows. Mr. George Reid says that "it robs nests, if not habitually, at least occasionally, for I have more than once seen it despatching eggs with great gusto."

No bird, not even the famous Jackdaw of Rheims, is half so impudent. Often whilst the Martinière boys—some 250 or more—have been actually sitting at meals, I have seen Crows come through the open windows and snatch scraps off the table before anyone could touch them. When once the signal to dismiss had been given, the Crows would dart in instantly, and the Kitmatghars would be seen rushing round to drive them away from what they (the natives) looked upon as their lawful perquisites.

This Crow breeds in numbers during the rains. Mr. Reid says "very generally in July and August"; but nearly all my eggs, and I have taken dozens, have been procured during the month of June.

It breeds on any tree, but I think for choice on the babools along the railway-line. The nest is composed of an outer layer of sticks, the thornier the better, lined inside with grass—*never* with hair, as is invariably the case with *C. macrorhynchus*. The eggs are usually four in number, though occasionally I have taken five. In the nests of this bird the hen Koel (*Eudynamis honorata*) lays her eggs. I have taken sometimes one, sometimes two, Koel's eggs

together with from two to four of the Crow. On one occasion I found a nest which contained two fresh Koel's eggs but no Crow's. It is very curious to notice the dislike of the House-Crow for the Koel, which it pursues relentlessly; the Jungle-Crow, on the other hand, is seemingly quite unaffected by a sight of the speckled lady. Like the majority of the Crow tribe, the eggs of *C. splendens* are green, marked and blotched more or less profusely with various shades of darker green and brown. In size they vary remarkably, from 1''·37–1''·80 in length, and from 0''·99–1''·11 in breadth; but the average of ten Lucknow eggs—I have been too lazy to measure more—is 1''·58 × 1''·05, which is a good deal less than in *C. macrorhynchus*.

No. 16. DENDROCITTA RUFA. *Indian Tree-Pie*.

Mootri [H. Lucknow]. Ogilvie; Long-tail Jay [Anglo-Indian boys].

The Indian Tree-Pie, with his handsome plumage of fawn and sooty brown and his long tail, is a common and well-known resident, frequenting topes, gardens, and avenues indiscriminately. When not breeding this species often goes about in small parties of five or six. Its flight is undulating. When angry, excited, or alarmed it keeps up a harsh disagreeable chattering, but its other note, something like "cog-ee cog-ee," is mellow and pleasing. Though I have never actually seen any proof myself, close observers, including my friend Mr. Benjamin Aitken, declare that this bird is a great destroyer of the eggs and young of other species. Mr. George Reid writes:—"A specimen that I shot had evidently robbed some nest, for its bill was smeared with the yolk of eggs. On another occasion I actually caught one in the act of robbing a Babbler's nest."

This bird nests from the end of March (first egg April 1st.—W. J.) to the beginning of July (last egg, July 7.—G. R.), but by far the greater number of eggs are taken between April 15th and June 15th.

The nest is a very poor sort of structure of sticks lined with grass, and is usually at the extreme tip of a mango,

although I have taken it on sheshum and popul trees. Five is the full clutch, though three and four incubated eggs are almost as common. I have a most lovely series varying enormously in shape, size, and colour. The commonest variety is leaden white profusely blotched with red; but I have pure white examples with red, bluish green with reddish and yellowish brown, green with profuse yellow-brown blotches (like very spherical and miniature Crow's), and pale yellowish green absolutely without a mark. With regard to these last, had I not—as, indeed, I have with every clutch of the Tree-Pie—observed the bird not once, but several times on the nest, and seen the eggs lifted out from under her, I would not have believed in their parentage.

Of sixteen Lucknow eggs the average is $1''\cdot11 \times \cdot82''$.

No. 105. ARGYA CAUDATA. *Common Babbler*.

Hedge-Sparrow; Bush-Sparrow [Anglo-Indian boys].

“The striated Bush-Babbler is a common and permanent resident, very abundant in dhak and thorn jungle, less so in patches of thatching-grass which it also frequents, and is seen, though not habitually, in hedgerows and about gardens, and is not uncommon in the large, grass-hedged, guava-groves about Lucknow.”—G. R.

My own experience is that this bird is not common just round the station, its favourite jungle having been cleared away to a great extent for cultivation during the last decade. It is found in small parties in the tamarisk-jungle along the river, but is commoner some miles from Lucknow.

I once found its nest on March 25th, shooting the bird off three eggs, in a stunted bush near the butts on the La Martinière rifle-range. Another nest, in which there were two eggs, was robbed—apparently by crows—some days before. Both nests were neat cups, something like those of *A. malcolmi*, but were very much smaller, deeper, and lined with fine grass.

Mr. George Reid took eggs, seemingly in corounda and dhak jungle, on the following dates :—

May 5	nest and 3 eggs (hard-set).	
May 31	„ 3 „ (fresh).	
June 20.....	„ 3 „ „	
July 20.....	„ 3 „ „	
July 29	„ 3 young (just hatched).	
Average measurement of the above 12 eggs		·81" × ·62"
Measurement of smallest egg.....		·77" × ·60"
„	largest egg	·88" × ·75"

The eggs, like those of *A. malcolmi* and *Crateropus canorus*, are glossy blue, without spots, and often very round.

No. 107. ARGYA MALCOLMI. *Large Grey Babbler*.

Bhaina [H. Lucknow]. White-tailed Magpie [Anglo-Indian boys].

It is most curious that Reid should not have found this species in Lucknow. It seems very capriciously distributed over Northern India, being absent in many places and numerous in others without any apparent cause. It is not a bird that can be overlooked by an ornithologist, for its cry, which is very harsh and characteristic, betrays it at once, and, as it flies, the whitish colour of the lateral tail-feathers is most conspicuous. I find it common in certain spots—the La Martinière Park being one—and take nests every season. I have found eggs on dates too numerous to mention between March 3rd and June 30th. The greater number of nests have been on babool-trees, in which case they are always solid structures of thorn carefully lined with grass. I have also found the bird breeding on the mango and the sheshum, when the nest lacked its outer covering of thorn, but was always a neater structure than that of *Crateropus canorus*. The full number of glossy blue eggs is four, but three young are not uncommon.

On March 21st, 1896, I found a nest of this bird at the top of a mango, containing three fresh eggs and one hard-set. The latter was blunt at both ends like a Dove's, the blue tint was much deeper, and I am certain that it belonged to the Common Hawk-Cuckoo (*Hierococcyx varius*). Unfortunately it has mysteriously disappeared from my collection.

Average of 10 Lucknow eggs	·97" × ·68"
Measurement of largest egg	1"·06 × ·66"
„ smallest egg	·94" × ·75"

No. 110. CRATEROPUS CANORUS. *Jungle-Babbler*.

Sat-bhai; Ghoughai [H. Lucknow]. Seven-Sisters; Magpie [Anglo-Indians].

The Sparrow, the Crow, the Mainah, and the Jungle-Babbler are the four commonest and noisiest species in Lucknow. The last-named may always be seen in parties of seven or eight—whence the popular name—hunting for insects amongst the leaves under the trees of our parks and gardens. All the time the whole assembly keep up a confused chattering, which, though not pleasing, is not so intensely disagreeable as the cry of *A. malcolmi*.

“When the Shikra, as it sometimes does, makes a swoop at a party of Babblers, it is curious to observe how silent they become, sneaking off singly to the tops of trees, where they hide for some time, and then begin to file away to some other locality, where they still keep very quiet until well engaged in the business of feeding again.”—G. R.

Breeds from March to June (to September.—G. R.), making a poor nest of grass in almost any tree—orange, citron, guava, mango, palm, sheshum, &c.,—rarely at any great height from the ground. Eggs three or four—I once found six,—deep blue and very glossy.

Average of 12 Lucknow eggs	·99" × ·77"
Measurement of largest egg	1"·05 × ·79"
„ smallest egg	·95" × ·76"

The Hawk-Cuckoo (*Hierococcyx varius*) and the Pied-crested Cuckoo (*Coccyzus jacobinus*) undoubtedly select the nests of the three Babblers here given in which to deposit their eggs, but it is almost impossible to identify them with certainty. Elliptical or spherical eggs will *probably* belong to one or other of these Cuckoos, and that, as a rule, is about all you can say for them.

No. 139. PYCTORHIS SINENSIS. *Yellow-eyed Babbler*.

Reed-Warbler [Anglo-Indian boys].

“The Yellow-eyed Babbler is very common and a permanent

resident, rather more abundant during the cold weather than in the hot and rainy seasons. It is fond of grassy bush and dhak-jungle, but fonder still of patches and rows of tall thatching-grass, on the stalks of which, when seeding, it settles and searches diligently for insects, generally in parties ranging from six to a dozen. During the heat of the day the birds usually retire to rest in some bush overgrown with long grass, where they may be heard conversing in a low chatter. If then disturbed they make a great noise, and scuttle through the adjoining grass in all directions, becoming silent as they hide or squat, and remaining so until the intruder moves off, when they generally re-assemble in the same bush, or in some other close by. The male bird sings very sweetly, oftenest, I think, in the cold dewy November mornings."—G. R.

I have nothing to add to Mr. Reid's statements, beyond the fact that I do not consider the bird quite so common—in Lucknow, at all events—as he infers. It breeds during the "rains," but not commonly. The Martinière boys only get one nest or so every year, and they are far too clever to let much escape them.

On July 29th, 1898, Lieut. S. A. Davies, of the 2nd E. Lancashire Regiment, and I took five hard-set eggs in a beautiful nest woven into some high patowal grass near the railway-line. The structure was a deep inverted cone, and was plastered outside with spiders' webs, much after the fashion of that of the Fantail Flycatcher. The eggs, which are amongst the handsomest that I have seen, were very round, of a pinky-white ground-colour, richly blotched with deep blood-red. The bird was on the nest, but darted off every time we approached and hid in the dense grass, so that shooting her was out of the question. There is, I think, *no doubt whatever* as to the authenticity of these eggs, which are similar to a series shown me by Mr. B. B. Osmaston, taken by him in the Dún.

Average of 5 Lucknow eggs	·68" × ·55"
Measurement of largest egg	·71" × ·56"
„ smallest egg	·66" × ·55"

No. 226. *ZOSTEROPS PALPEBROSA*. *Indian White-eye*.

Baboona [H. Lucknow]. Yellow-Hammer [Anglo-Indian boys].

The White-eye is a very common bird and a permanent resident. It is of a sociable disposition and may be found in any mango-grove, avenue, or compound in small parties diligently searching the leaves for insects.

This species breeds with us from the beginning of April to the end of July, but, according to my record, June is the best month to search for their eggs. The nest, which is usually very difficult to find, is a lovely little basket of fine grass, cobwebs, and fibres, and is a perfect miniature of that of the Golden Oriole. Four is the greatest number of eggs that I have found, but three are more usual. All that I have found have been pale unspotted blue, but occasionally they are marked with darker shades of the same colour.

Average of 14 Lucknow eggs $\cdot 58'' \times \cdot 45''$

Measurement of largest egg $\cdot 63'' \times \cdot 46''$

„ smallest egg $\cdot 53'' \times \cdot 45''$

No. 243. *ÆGITHINA TIPHIA*. *Common Iora*.

Yellow-bird [Anglo-Indian boys].

This lovely little species is common, but is very shy and comparatively seldom seen. The note is very rich and loud for so small a bird, and once known is not easily forgotten. By following up the call—not an easy matter, for the Iora is no mean ventriloquist,—you may be able to catch a glimpse of a beautiful little black-and-yellow bird, with a white bar across the wing due to the white median wing-coverts.

The nest is one of the most difficult to find of any, both on account of the shyness of the parents, and also from its being most carefully hidden. So far I have only taken the eggs myself twice [June 17th, 1898; July 26th, 1901]. Nests and eggs have been brought me in April, May, and June, and Mr. George Reid took a nest and three eggs on July 16th.

This April a pair bred near my bungalow. All the regular egg-collectors were on the search for weeks, but though the Martinière boy has a genius for discovering well-hidden

from mankind. I have taken nests from April to August on all kinds of trees. The usual number of eggs is three; they are pinkish white, spotted and blotched with claret-colour. On one occasion I took two hard-set eggs from a nest on a rafter in a bungalow-verandah.

Average of 10 Lucknow eggs	·87" × ·64"
Measurement of largest egg	·95" × ·72"
„ smallest egg.....	·75" × ·63"

No. 288. *OTOCOMPSA EMERIA. Bengal Red-whiskered Bulbul.*

Kangra Bulbul [H. Lucknow]. Conqueror Bulbul [Anglo-Indian boys].

This Bulbul is very common in Lucknow itself, less so in the district outside. It is particularly fond of such localities as the Wingfield Park, the Horticultural Gardens, and the Clock Tower Gardens. I have taken its nest in all months from the middle of March to the middle of July, but Mr. Reid seems to have got the eggs only in May. It is a neat cup of grass, fine twigs, bamboo-leaves, cotton, spider's webs, and similar materials, and is, in most cases, placed in a thick bush or creeper. I have several times found it built in one of the fern-baskets that swing in the cool damp houses of the various public gardens. I have never met with more than three eggs, which are white or pink, densely spotted and blotched with red, claret, and purple.

Average of 12 Lucknow eggs	·82" × ·62"
Measurement of largest egg	·86" × ·70"
„ smallest egg.....	·80" × ·60"

No. 321. *SITTA CASTANEIVENTRIS. Chestnut-bellied Nut-hatch.*

Brown Woodpecker [Anglo-Indian boys].

This pretty little bird, with its slaty-blue plumage above and chestnut coloration below, is very common, a pair inhabiting almost every mango-grove. It breeds in holes of trees from the end of February to the beginning of April. For a nest it usually utilizes a hole in a knot in the trunk of a mango or pekul, but I have also found more than one in neem

and jamun trees. Interiorly it is lined with little bits of leaves, and round the hole the birds stick mud mixed with a gummy resinous substance, which becomes very hard. I have often watched a pair working away at the task of closing up their selected nursery. It is rather easy to find, if you carefully watch the birds, but in nine cases out of ten the obtaining of the eggs is a matter of difficulty. Four is the greatest number that I have found. They are white, spotted or freckled—rarely blotched—with brick-red.

Average of 8 Lucknow eggs	·67" × 54"
Measurement of largest egg	·70" × ·53"
„ smallest egg	·65" × ·52"

No. 327. *DICRURUS ATER.* *Black Drongo.*

Hojanga, Buchanga [H. Lucknow]. King-Crow [Anglo-Indians].

The King-Crow is one of the commonest of our birds and a permanent resident, which may be met with everywhere, on the open maidan as well as in the compound or in the mango-grove. It is very fond of perching on the backs of cattle, and also upon telegraph-wires, tops of trees, and other more natural look-out places. It catches its insect-prey on the wing, returning to its perch to devour it. Crickets, grasshoppers, butterflies, &c. seem to be its chief food. It is a very pugnacious bird, more particularly during the breeding-season, and woe betide any evil-minded Crow that happens to pass within a hundred yards of the nest. It has a fair variety of notes, some harsh and disagreeable, others pleasing.

Mr. George Reid wrote :—"On one occasion, early in May, I saw what I thought was a curious sight—a Drongo cutting such antics on the wing that I never for a moment suspected that it was all the while belabouring a poor Tit or Warbler which it must have had in its talons. The liberation of the little captive fairly astonished me, but, judging from the rapidity with which it made for the nearest tree, it was more frightened than hurt."

The King-Crow breeds from the end of April to the middle of July, but most nests will be found during the latter

half of May and the first half of June—Reid says from the 15th of June to the 10th of July. The nest is a strong neat cup of roots and grass, firmly fixed in the fork of a tree and covered over and bound to the branch with plenty of cobwebs. The eggs, three or four in number, are of three types: (a) salmon, spotted with brown, red, and purple; (b) white, spotted with various shades of red; (c) pure white.

Spotted eggs.

Average of 41 Lucknow eggs	·99" × ·72"
Measurement of largest egg	} 1"·00 × ·78" (broadest). 1"·06 × ·72" (longest).
„ smallest egg	
„ smallest egg	·91" × ·64"

White eggs.

Average of 13 Lucknow eggs	·97" × ·72"
Measurement of largest egg	} 1"·02 × ·76" (broadest). 1"·06 × ·72" (longest).
„ smallest egg	
„ smallest egg	·88" × ·63"

No. 330. *DICRURUS CÆRULESCENS. White-bellied Drongo.*

This bird is not uncommon during the cold weather in well-wooded places, but is never numerous. Its voice is infinitely sweeter than that of the Common King-Crow. I have never seen this bird consorting with cattle—in fact, I have only observed it in mango-topes, so far as I can remember. I believe that it migrates towards the end of March, as I have never seen it in the hot weather or during the rains.

No. 335. *CHIBIA HOTTENTOTTA. Hair-crested Drongo.*

I know nothing of this bird's occurrence here.

Mr. George Reid wrote:—"The Hair-crested Drongo can only, I think, be considered as a rare visitor during the rains. It is then occasionally brought into the market, but I have only once seen it in its wild state frequenting the outer trees of a mango-tope near Lucknow. It seems strange that it should be found here at all during the rains, and not in the cold weather."

[To be continued.]

XXVIII.—*Remarks on Audouin's Gull* (*Larus audouini*).

By Count E. ARRIGONI DEGLI ODDI.

AUDOUIN'S GULL (*Larus audouini*) may fairly be considered the rarest of the European species, for the other Gulls are sufficiently plentiful in the districts in which they breed, although they may appear only as stragglers in the south, while the subject of this article is very uncommon even in the small area to which it belongs. It is a true Sea-Gull, and Mr. Howard Saunders, the chief authority on the family, describes its habitat in this manner* :—"Western Mediterranean, chiefly within the Tyrrhenian Sea, but as far as the Straits of Gibraltar and a little outside." It was included among Grecian species by Lindermayer†, and among those of Corfu by the Hon. T. L. Powys‡ (afterwards Lord Lilford), while Erhard states that it winters in the Cyclades, and Canon Tristram§ that it is the commonest Gull on the Lake of Galilee, though his specimens all proved to be Common Gulls. Mr. E. C. Taylor|| thought that some Gulls which he saw near Cairo were of this species, and v. Heuglin consequently admitted it to his list¶.

The most eastern locality in which Audouin's Gull has been procured is Melissa, in the Sporades, whence two examples have been sent to the Sarajevo Museum**. To the westward Natterer found it at Tarifa, and it has been seen a little outside of Gibraltar. Loche has stated that it bred in Algeria, but has given no further details; it has occurred from time to time in Corsica and in Sicily, but has only once been killed on the mainland of Italy, in Liguria. It is resident on the rocky islets round Sardinia, from Spargi and Spargiotto††, Caprera and Maddalena (Straits of Bonifacio) to

* Cat Birds Brit. Mus. xxv. pp. 271-273 (1896).

† Die Vögel Griech. p. 177 (1860).

‡ Ibis, 1860, p. 356.

§ *Op. cit.* 1868, p. 330.|| *Op. cit.* 1867, p. 72.

¶ Orn. N.O.-Afr. Bd. ii. pt. 2, p. 1387 (1873).

** E. Arrigoni Degli Oddi, Ornith., x. p. 182 (1899).

†† Lord Lilford, Ibis, 1887, pp. 280-281.

Mal di Ventre and Catalano *, off Oristano (Western Sardinia), also in the Toro and Vacca Islands, Leghorn, and some other places. Professor Giglioli † says that no other Gull is found at Camicia Harbour, and Mr. Bonomi that it is very abundant at Porto Torres, where, however, I saw only Yellow-legged Herring-Gulls and Black-headed Gulls.

In Corsica, Audouin's Gull is apparently met with but rarely on the western coasts, but Whitehead ‡ states that he found a wounded individual during a violent storm. In a series of excellent notes, Prof. Damiani § reports that six specimens were killed on Elba in the months of January, March, May, August, and December, two of them being now in the collection of Mr. Tonietti at Porteferraio, in that island, two in mine, one in the Royal Museum at Florence, and one in the Civic Museum at Milan. I believe that the bird also occurs in the islands of Capreja, Pianosa, and Monte Cristo.

In Sicily this Gull has appeared near Catania and Palermo, and some fine specimens are preserved in the Museum of the latter town, whence also one was sent to the British Museum || (February 1886). Mr. Wright reports having seen an example in Malta ; while the Ligurian specimen above mentioned was killed by Marquis Pinelli-Gentile on May 10th, 1883, at the mouth of the Cente, near Albenga, and is now in his collection. Messrs. Giglioli and Salvadori do not recognise any other Ligurian examples, but Baron Schalow ¶ attributes two which are in the Museums of Genoa to that country **.

The bird has never been obtained in the Adriatic, although Count Contarini has recorded it from Venetia in error, while

* I procured two fine specimens there myself.

† Avif. Ital. p. 430 (1886).

‡ Ibis, 1885, p. 47.

§ Avicula, 1898, p. 131, 1901, p. 1 ; Boll. Soc. Zool. Ital. x. p. 49 (1901).

|| Cat. Birds Brit. Mus. xxv. p. 273 (1896).

¶ J. f. O. 1877, p. 191.

** Cf., however, Giglioli, Ibis, 1881, p. 219.

Mr. Schiavazzi has acknowledged that he was mistaken as to two specimens caught at Pirano in Istria. The latter gentleman has also mentioned an example in the Museum at Vienna, obtained by Natterer in 1815; but this may be that from Tarifa, and in any case the date is previous to Payrandeau's description of the bird in 1826. I could not find any trace of this specimen in the Museum.

Audouin's Gull was found nesting on the island of Mal di Ventre by the late Marquis Nerli, and on Toro by Lord Lilford, while it breeds on the Columbretes, in the Gulf of Valencia, and has probably been overlooked in many of the rocky islets off Sardinia, where *Larus cachinnans* is found. The eggs have been fully described by Mr. Oates in the 'Catalogue of Birds' Eggs in the British Museum' (i. p. 217).

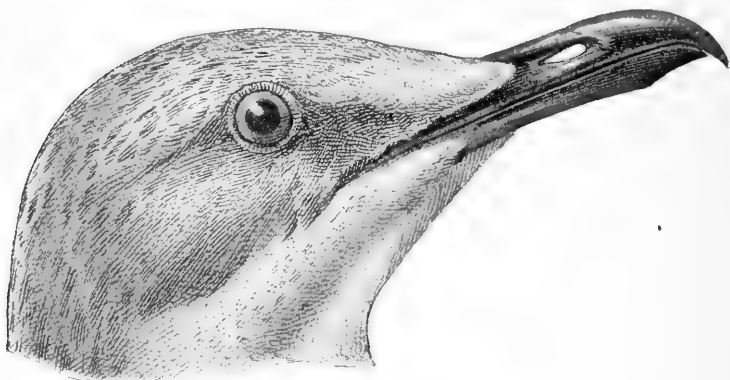
The Italian Museums and private collections which possess specimens of Audouin's Gull are the following :—

- a. Civic Museum of Milan (one specimen from Elba).
- b. Civic Museum of Genoa.
- c. Collection of Marquis Pinelli-Gentile of Genoa (the only Ligurian-killed example).
- d. R. Museum of Florence (a beautiful series of seven or eight specimens, with a young bird and eggs; all from the island of Mal di Ventre).
- e. Collection of Mr. Toniatti at Portoferraio (Elba) (two specimens from Elba).
- f. Collection of Marchioness Paulucci of Florence (one specimen from Sardinia).
- g. R. Museum of Cagliari (three adult specimens).
- h. R. Museum of Palermo (five adult specimens).
- i. Collection of Mr. J. Whitaker at Malfitano, Palermo (a beautiful series of seven or eight specimens which belonged to the late Lord Lilford).
- j. My Collection (sixteen specimens, with some immature and young birds, and also some that are half-grown, about which I shall speak further).

I shall not enter into the habits of the species, as they are sufficiently well known, but will proceed at once to describe the plumage of the young in its first dress, which I am especially anxious to put on record, as it is not given by

any author with whose work I am acquainted. For comparison I give the description of the Yellow-legged Herring-Gull in a similar state of plumage.

Fig. 12.

Head of *Larus cachinnans*.

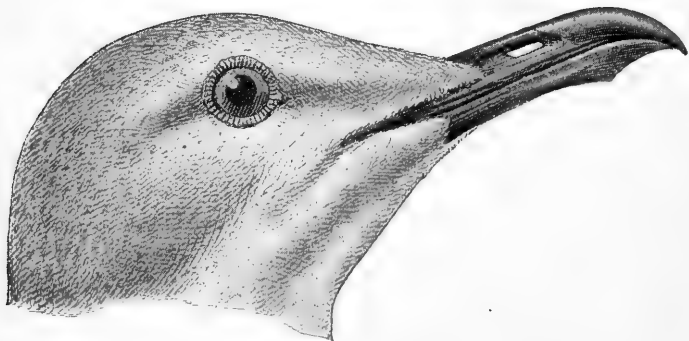
Yellow-legged Herring-Gull (Larus cachinnans), young male in first dress, but able to fly.—Island of Capraja (Tuscany), June 14, 1901. Prof. Damiani [C.].

Bill blackish, horn-coloured at the end, paler at the base of the lower mandible; iris dark hazel; head and neck whitish buff, with a broad, elongated, blackish-brown central stripe, which here and there is so expanded that no light pattern is visible; darker beneath the eyes and on the auricular region; a blackish spot in front of the eye; the back, mantle, innermost secondaries, and wing-coverts almost blackish, with a broad buffish marginal edge, which is more or less suffused with grey; this is still broader and more whitish on the rump, with the two colours in great contrast; upper tail-coverts whitish buff, with blackish spots and bands; chin and throat white, a little buffish and uniform; under-parts uniform buffish grey, with large, dark, blackish centres or irregular blotches, very distinct on the sides of the neck and flanks and quite obsolete elsewhere, so that these parts appear to be uniform in ground-colour;

middle of the lower abdomen whitish ; under tail-coverts white, a little buffish, with two blackish-brown transverse bands, sometimes not wholly regular but always very well marked ; primary-quills quite black, with paler inner webs and whitish tips to most of them ; secondaries dark umber, tipped with buffish grey ; central tail-feathers marbled or barred with blackish on a whitish ground-colour at the base, then dull dark brown, and finally tipped with dirty white ; outermost tail-feather white, the following outside and the two middle feathers white barred with dark brown at the base, dark brown towards the tip, finally tipped with dirty white ; under wing-coverts and axillaries smoky brown, the latter indistinctly marbled with dull grey ; feet greyish brown.

Bill from the forehead 1·9 inch ; wing 15·5 inches.

Fig. 13.



Head of *Larus audouini*.

Audouin's Gull (*Larus audouini*), young male in its first dress, but able to fly.—Island of Vacca (S.W. Sardinia), July 12, 1901. P. Bonomi [C.].

Bill blackish, overspread with reddish at the base and near the apex of the culmen, horn-coloured at the end ; iris very dark hazel ; the colour of the head and neck of a light whitish grey, with the edges of the feathers suffused

with buff; the back with a brownish appearance, but the end of the feathers buffish; the wings and lower back like those of the Yellow-legged Herring-Gull, but the edges broader, and the buffish tint lighter and not overspread with grey, but with whitish yellow; chin and throat buffish white; under-parts greyish, with the feathers edged with buffish, the grey tint overspread with brownish, more distinct on the sides of the breast and of the upper abdomen; lower abdomen, vent, under tail-coverts, and the sides snow-white, some of the lateral under tail-coverts shewing a dark greyish spot towards the end of the feathers on the outer web; tail-feathers blackish, with a broad terminal band and an edge of light buffish white, the base of a delicate pearly white, the light pattern more extended on the inner webs of the outside feathers; feet dark dirty plumbeous.

Bill from forehead 1·67 inch; wing 13·5 inches.

A young male of the same age, date, and locality has the greyish on the head and upper-parts darker, and also the dark tint on the under-parts, so that the contrast with the snow-white of the belly is more evident.

Bill from forehead 1·6 inch; wing 12·4 inches.

Two other females from the same locality and with the same date are younger and not fully grown; they resemble the above-mentioned young males, but there are some grey downy tracts on the neck and on the sides of the head.

Bill from forehead 1·6 inch; wing 10·7 inches.

Besides the small size and the dimensions of the bill and wing, the differently coloured bill, the darker and more uniform pattern of the plumage, the snow-white abdomen and vent, we must call attention to the very different pattern of the tail-feathers and the shape of the bill, which enable us to recognise this species at once in its first dress after the downy nestling-period.

Yellow-legged Herring-Gull, young, in the first dress.

Bill stouter and larger, with the rami of the lower mandible straight or a little arched, the space from the gonys to the

end of the bill a little arched, the base of the culmen on the upper side a little convex; the angle of the gonys rather distinct; the nostrils elongated, somewhat oval, and broad (see fig. 12, p. 494).

Tail-feathers white at the base, with some blackish transverse bars (except the outermost one and sometimes that which follows); outermost tail-feather white at the end, the basal three-fourths of the second and third outside feathers and half the others white, all banded with blackish; these bands sometimes not regular and always scanty in the second and third, more abundant in the following and in the central, all having a subterminal blackish band and with dirty white tips.

Audouin's Gull, young, in the first dress.

Bill thinner and more elongated in proportion, with the rami of the lower mandible decidedly arched, the space between the gonys and the end of the bill longer and much more arched, the base of the culmen on the upper side more flat; the angle of the gonys clearly distinct; the nostrils straight, linear, and narrower (see fig. 13, p. 495).

Tail-feathers pearly grey-white at the base, without any blackish transverse band, the light pattern more extended on the inner webs of the feathers. They are pearly grey-white for about one-fourth of their length, the light pattern increasing in extent for three-fourths of the total length on the inner webs of all of them except the two central (which are black, except at the base); in the rest they are blackish, tipped with dirty white, and with the outermost one edged with white.

In concluding this note I give a list of the specimens in my Collection:—

a. ♂ ad. Island of Elba, August 26, 1883.—*Ex Coll. Roster.*

Bill from forehead* 1·9 inch, coral-red, with a subapical blackish band; wing 16·6 inches.

* I always measure the bill from the feathered space down the forehead to the tip, and I observe that this space is very much prolonged on the base of the bill, so that it appears shorter than it is.

- b.* ♀ ad. Malfatano, Gulf of Palmas (S. Sardinia), May 5, 1899.—P. Bonomi [C.].

Bill 1·67 inch, coral-red, overspread here and there with blackish, and with two subapical black bands; wing 16 inches.

- c.* ♂ ad. Island of Elba, December 22, 1900.—Prof. Damiani [P.]*.

"Iris brown; bill 2 inches, coral-red, with a broad blackish subterminal band and a small shade at the base of the culmen; wing 16 inches.

"The first winter-killed specimen at the Island of Elba."

- d, e.* ♂ and ♀ ad. Teulada (S. Sardinia).—P. Bonomi [C.].

Bill 1·8 inch; wing 16·5 inches.

- f, g.* ♂ and ♀ ad. Island of Mal di Ventre (W. Sardinia), March 1901.—E. Arrigoni Degli Oddi [C.].

The male has only one large subapical band, the head, the lores, and sides are spotted with greyish as much as in the winter dress of the Common Gull. I think that this is an immature specimen, and not an adult in winter dress. It is also like that described by Mr. Saunders in lacking the white spot on the outermost primary. This remarkable specimen measures: bill 2 inches, wing 16·3 inches.

The female is a white-headed bird, with only one subterminal band on the bill, which measures 1·7 inch; wing 15·7 inches.

- h-l.* Three ♂ ad. and two ♀ ad. Cala Galera (Gulf of Palmas), July 11, 1901, and Island of Vacca (S.W. Sardinia), July 12, 1901.—P. Bonomi [C.].

All with two black subterminal bands on the bill, which measures 1·8 to 2 inches; wing 16 to 16·8 inches.

- m-p.* Two ♂ young and two ♀ young. Island of Vacca, July 12, 1901.—P. Bonomi [C.].

Those which are described above.

All of the specimens (except the male from the Island of Mal di Ventre and the four young birds) are wholly white-headed, with the outermost primary shewing a small white subapical spot on the inner web. I think that the greyish-brown streaks on the head and neck are a true mark of immaturity, and not a peculiar winter dress, which I believe to be like the full breeding-plumage. I have mentioned that some specimens shew only one dark subterminal band on the bill, and others two. I think that, generally speaking, in the adult bird the two are combined together, and so

* For the gift of this beautiful specimen I am particularly indebted to my friend Prof. Damiani, of Portoferraio.

become a single broader band, while it appears to me that the total breadth of the two and the red space between them corresponds to the size of the single band in the adult. I believe, moreover, that this is the last-assumed mark of full development, and that it is generally found after the streaked appearance on the neck and head is lost; there are, however, exceptions to this rule (*cf.* the male specimen from Mal di Ventre in my Collection). According to what I could observe, and with the material that I had at my disposal, I certainly consider that the two bands and the black blendings scattered here and there over the bill are marks of immaturity.

XXIX.—*Proceedings at the Anniversary Meeting of the British Ornithologists' Union, 1902.*

THE Annual General Meeting of the British Ornithologists' Union was held in the rooms of the Zoological Society of London, 3 Hanover Square (by permission of the Council of that Society), on Wednesday, the 14th of May, at 6 P.M. In the regretted absence of the President, owing to illness, Dr. P. L. SCLATER, F.R.S., took the Chair.

The Minutes of the last Annual Meeting having been read and confirmed, the Report of the Committee was read. They were glad to be able to state that the prosperity of the Union had continued undiminished during the past year.

The annual volume of 'The Ibis' for 1901 had been published in regular course. It was the first of the Eighth Series, under the joint Editorship of Dr. P. L. Selater, F.R.S., and Mr. A. H. Evans, M.A., and consisted of 782 pages, illustrated by 15 plates.

The Committee regretted to report the loss by death of seven Ordinary Members of the Union since the last Anniversary, namely: the Rt. Hon. Lt.-Col. E. H. Cooper, Mr. H. M. Courage, the Rev. H. A. Macpherson, Lord Malcolm of Poltalloch, Capt. Eric Streatfeild, Mr. Lionel W. Wigglesworth, and Mr. John Young. The resignation of Mr. Arthur H. Holland had been accepted; but it had not been found necessary to remove any Member under Rule 6.

The Union on May 14th consisted of 347 Ordinary Members, 2 Extraordinary Members, 9 Honorary Members, and 17 Foreign Members, making a total of 375. Twenty-eight Candidates for the Ordinary Membership were seeking admission to the Union.

The finances were adequate, although the expenditure on the illustrations had been somewhat heavier than usual.

The Report having been adopted, the Accounts for the year, audited by Mr. H. E. Dresser, were presented by the Secretary and approved by the Meeting.

Dr. F. DuCane Godman, F.R.S., was re-elected President, and Mr. Howard Saunders Secretary for the ensuing year. Dr. F. G. D. Drewitt was elected a Member of the Committee, in the place of Mr. W. E. de Winton, who retired by rotation.

The following alterations in the Rules of the Union were recommended by the Committee:—

Rule 2, par. 1. To insert the words “Colonial Members” after “Extraordinary Members,” and for par. 3 to insert “Colonial Members to be eminent Ornithologists residing in the British Colonies and India, and not to exceed ten in number.”

Rule 3, last par. To insert the word “Colonial” after the word “Honorary.”

The effect of these alterations would be to form a new class of Colonial Members, not to exceed ten in number.

These alterations were discussed and adopted by the Meeting.

The following twenty-eight Candidates were then balloted for and declared to be duly elected Ordinary Members of the British Ornithologists' Union:—Harry Becher, C.E., 4 Walpole Street, Chelsea, S.W.; The Hon. Richard O. B. Bridgeman, Lieut. R.N., H.M.S. ‘Partridge,’ Cape of Good Hope Station; Bertram A. Bristowe, The Cottage, Stoke D'Abernon, Surrey; Robert M. Cowie, M.R.C.S., 2nd Life Guards, Windsor; Charles Henry Dent, Raincliffe Villa, The Valley, Scarborough; The Rev. Allan Ellison, M.A., Ardoyne House, Watton, Hertford; Capt. Stanley S.

Flower, F.Z.S., Kedah House, Zoological Gardens, Gizeh, Cairo ; William Bevington Gibbins, Ettington, Stratford-on-Avon ; Frederick Gillett, Woodfield, Burgess Hill, Sussex ; Arthur Riley Gillman, 5 Fellows Road, Hampstead, N.W. ; John Randall Hatfield, Edlington Hall, Horncastle, Lincolnshire ; Bron Herbert, Picket Post, Ringwood, Hants ; Geoffrey Secombe Hett, 18 Chepstow Place, Bayswater, W. ; Walter Francis Innes, Bey, M.D., Curator of the Zoological Museum, School of Medicine, Cairo, Egypt ; Frank Harwood Jacob, M.D., 4 Oxford Street, Nottingham ; Norman Humbert Joy, M.R.C.S., L.R.C.P., Bradfield, near Reading ; Norman Boyd Kinnear, 12 Grosvenor Crescent, Edinburgh ; John Bruce Nichols, Parliament Mansions, Victoria Street, S.W. ; Michael John Nicoll, 10 Charles Road, St. Leonard's ; Alfred Edward Pease, M.P., Pinchinthorpe House, Guisborough, Yorks ; Bernard Beryl Riviere, 82 Finchley Road, N.W. ; Arthur St. George Sargeaunt, 83 Madeley Road, Ealing, W. ; William H. Radcliffe Saunders, C.E., 33 Princes Square, W. ; Abel Henry Smith, M.P., Woodhall Park, Hertford ; John Hutton Stenhouse, M.B., R.N., H.M.S. 'Diana,' Mediterranean Squadron ; Reginald Gilliatt Townsend, M.A., Buckholt, Dean, Salisbury ; Edward Walter Wade, 325 Anlaby Road, Hull ; William Hughes Workman, Lismore, Windsor, Belfast.

The name of Prof. Gustav F. Radde, of Tiflis, was ordered to be transferred from the list of Foreign Members to the list of Honorary Members.

The following gentlemen were elected Foreign Members :—Mr. Frank Michler Chapman, American Museum of Natural History, New York, U.S.A. ; Dr. Herman von Ihering, C.M.Z.S., Museu Paulista, São Paulo, Brazil ; and Dr. Peter Suschkin, C.M.Z.S., Imperial University, Moscow, Russia.

After a vote of thanks to the Council of the Zoological Society of London for the use of their Rooms, the Meeting adjourned.

The Annual Dinner, subsequently held at Limmer's Hotel (Dr. P. L. Sclater, F.R.S., in the Chair), was attended by twenty-one Members.

XXX.—*Notices of recent Ornithological Publications.*

[Continued from p. 351.]

74. '*Annals of Scottish Natural History.*'

[The Annals of Scottish Natural History. No. 41, January 1902, and No. 42, April 1902.]

The first number of this journal contains an interesting article by Mr. Charles Campbell on a large Starling-roost on Cramond Island in the Firth of Forth. Mr. T. G. Gunnis follows with details of the shooting, on Tiree, of the example of *Porzana carolina* which was exhibited by Mr. E. Lort Phillips at the British Ornithologists' Club on November 20th last, being the third recognition in the British Islands of this black-faced American representative of our Spotted Crake. Among the Notes are remarks on migrants in the south of Shetland, on considerable immigrations of Waxwings, on occurrences of the Great Snipe in Shetland as well as in Orkney, and on an exhibition of the first specimen of the Green Sandpiper from the Outer Hebrides. In the number for April, Mr. T. G. Laidlaw gives his usual Annual Report on the Movements and Occurrences of Birds in Scotland for 1901—a most useful epitome; while Mr. Harvie-Brown contributes an introductory article on additions to the ornithological knowledge of the Outer Hebrides acquired since 1888. Among the Notes, Mr. W. Eagle Clarke records further arrivals of Greenland Redpolls; while an example of Tengmalm's Owl was obtained in Shetland on November 5th, 1901, and presented to the Edinburgh Museum. Mr. G. Sim states that a Little Owl (*Athene noctua*), the first for Scotland, was obtained in Kincardineshire on February 1st; the breeding of the Pintail in Selkirkshire is recorded; and Mr. W. Eagle Clarke writes that he has received for identification specimens of *Sterna fluviatilis* from a considerable colony breeding on an inland loch in Shetland, the first authenticated instance for the group.—H. S.

75. 'The Auk.'

[The Auk. A Quarterly Journal of Ornithology. Vol. xix. Nos. 1 and 2, January and April 1902.]

Mr. A. C. Bent begins the year with a continuation of his illustrated paper on the nesting-habits of the Anatidæ in Northern Dakota, which is concluded in the April number. Mr. James Haynes Hill contributes a short article on *Loxia leucoptera* in captivity; while the title of Mr. J. W. Daniel's paper on the summer birds of the Great Dismal Swamp will revive recollections of anti-slavery agitation in readers of mature age. Mr. W. H. Kobbe investigates the question of the species or races of Herring-Gulls, and comes to the conclusion that there is no specific distinction between *Larus argentatus* and *L. vegæ* of Palmén, but that *L. cachinnans* is quite recognisable. We are glad to see that he has made good use of the Cat. Birds Brit. Mus. vol. xxv., although he has not arrived at quite the same conclusions as the author of the section Gaviæ. Mr. H. B. Bigelow's list of the birds observed on the north-eastern coast of Labrador is a useful supplement to Mr. L. M. Turner's birds of Ungava. The Report of the Committee on the Protection of North-American Birds is of great interest, especially Mr. Dutcher's portion relating to the Gulls and Terns. We may pass over some American papers which will be duly noted by the recorder of 'Aves' in the 'Zoological Record'; but occurrences of *Mareca penelope* in North Carolina and Long Island, as well as of *Nettion crecca* in the latter, deserve mention on this side of the water.—H. S.

76. Baker on the Birds of North Cachar.

[The Birds of North Cachar. By E. C. Stuart Baker. Journ. Bomb. Nat. Hist. Soc.—Part III. *op. cit.* ix. p. 111 (1894); Part IV. *op. cit.* x. p. 1 (1895); Part V. *op. cit.* x. p. 161 (1896); Part VI. *op. cit.* x. p. 339; Part VII. *op. cit.* x. p. 539 (1897); Part VIII. *op. cit.* xi. p. 291; Part IX. *op. cit.* xi. p. 390; Part X. *op. cit.* xii. p. 486; Part XI. *op. cit.* xiii. p. 399 (1901); Part XII. *op. cit.* xiii. p. 563.]

Mr. Baker has now sent us a complete set of his series of papers on the birds of North Cachar, of which we

have previously noticed only the two first parts (see 'Ibis,' 1895, p. 488). Taking them altogether we have a complete account of the Ornis of one of the most varied and interesting districts of the Indian Empire, to which the energetic author has devoted unceasing attention for many years. The excellent field-notes contain accounts of numerous discoveries of nests and eggs not known to any other collector and of great rarity. The eggs of three species of *Pitta* are described, as are also those of several little-known Cuckoos (*Coccytes coromandus*, *Chalcococcyx maculatus*, and *Hierococcyx nisicolor*), and full details of the curious nests of *Batrachostomus* are given.

Cyanops robustirostris (on the plate called *Mezobucco r.*) and *Corythocichla squamata* are described as new to science and figured, but the latter, Mr. Baker now tells us, is not different from *Turdinulus murinus* (Blyth).

77. *Bangs on Birds from Chiriqui.*

[I. On a Collection of Birds made by W. W. Brown, Jr., at David and Divala, Chiriqui. By Outram Bangs. The Auk, xviii. pp. 355-370.

II. Description of a new Woodpecker from Chiriqui. By Outram Bangs. Pr. New Engl. Zool. Cl. ii. p. 99.

III. On a Second Collection of Birds made in Chiriqui by W. W. Brown, Jr. By Outram Bangs. *Op. cit.* iii. pp. 15-70.]

In the first paper an account is given of a collection of bird-skins made by Mr. W. W. Brown, jr., in the lowlands of Chiriqui, at David and Divala. In 58 days this energetic taxidermist managed to secure 1183 specimens of birds and many mammals besides. Mr. Bangs gives a list of about 160 species, whereof six are "forms that appear to be new"; but it may seem to some of us that Mr. Bangs "cuts" his species and subspecies "rather fine." We may also remark that Mr. Bangs does not seem to be aware of the existence of a paper on the birds of the same district published as long ago as 1856, or at any rate does not mention it (see P. Z. S. 1856, p. 138).

The second paper is devoted to the description of a supposed new Woodpecker, based on a *single* specimen from

the same collection, which is proposed to be called *Veniliornis neglectus*. It is stated to be "similar to *V. ceciliæ* of Colombia and Ecuador, but smaller," &c. We may remark that both Salvin and Hargitt (excellent authorities on the Picidæ) have examined *more than one* specimen of *Chloro-nerpes ceciliæ* from Veragua, and have not hesitated to identify it with the typical form from Colombia. We are inclined to prefer their view of the matter. Mr. Bangs does not even care to mention that these distinguished ornithologists were of a different opinion from his own.

The third paper gives an account of a second large consignment of birds amassed by Mr. Brown between January and August 1901, chiefly on the Volcano of Chiriqui, where Arcé made his celebrated collections for Messrs. Salvin and Godman. The species represented in this series are about 260, mostly, of course, the same as those obtained by Arcé, but some probably additional. There is an interesting itinerary of Mr. Brown's journey up the volcano, which is well worthy of perusal. Mr. Bangs makes 6 new species and 8 new subspecies, but all of them appear to be nearly related to known forms.

The *Zeledonia coronata* of Ridgway *, formerly believed to be of Pterotochian affinities, is now supposed by Mr. Bangs to be best put "somewhere near the Thrushes"!

78. *Berlepsch and Hartert on the Birds of the Orinoco.*

[On the Birds of the Orinoco Region. By Count Hans von Berlepsch and Ernst Hartert. Nov. Zool. vol. ix., April 1902.]

Very little has been done in the way of ornithology in the district of the Orinoco, and this elaborate paper, the joint product of two well-known experts on South-American Birds, is consequently highly welcome to us. It describes the extensive collections made in 1897, 1898, and 1899 by Mr. and Mrs. Cherrie at several stations on the Lower and Middle Orinoco, from Altagracia upwards. The Tring Museum has, moreover, received a considerable number of skins from Ciudad Bolivar and from Suapure on the River Caura,

* See 'Ibis,' 1889, p. 262.

besides a collection made by Mr. André at several localities on the latter river. Unfortunately the dangers and difficulties met with by all the explorers interfered with the continuance of their work, which, however, it is hoped, may be resumed at a later period. The unworked Sierra Parima could not be reached.

From the places actually visited, however, a large series of birds, embracing examples of no less than 468 species, was obtained, so that it cannot be said that the results were in any sense meagre. At the highest stations on the Orinoco many forms hitherto known only from Upper Amazonia were met with, whilst on the Caura the Avifauna was found to bear more resemblance to that of British Guiana, with a certain number of endemic species.

The following are the names of the species and subspecies described as new:—*Microcerculus caurensis*, *Thryothorus griseipectus caurensis*, *Troglodytes musculus clarus*, *Hylophilus thoracicus griseiventris*, *Cyanerpes cærulea cherriei*, *Calliste mexicana media*, *Pyrocephalus rubineus saturatus*, *Tæniotriccus andrei*, *Habruira pectoralis brevipeennis*, *Serpophaga orenocensis*, *Thripophaga cherriei*, *Automolus sclateri paraeasis*, *Dendronis rostrispallens sororia*, *Xiphocolaptes orenocensis*, *Dendrocincla phæochroa*, *Thamnophilus doliatus fraterculus*, *Myrmotherula cherriei*, *M. cinereiventris pallida*, *Myrmeciza swainsoni griseipectus*, *Saucerottea erythronotos caurensis*, *Chlorostilbon caribæus nanus*, *Thalurania furcata fissilis*, *Lophornis verreauxi klagesi*, *Chatura andrei*, *Veniliornis orenocensis*, *Picumnus stellæ*, *Capito auratus intermedius*, and *Ramphastos hæmatorhynchus*. Two new generic names are proposed, namely, *Tæniotriccus* (p. 38) for *T. andrei* from the Caura River (a new form of *Platyrrhynchinae*), and *Phæomyias* (p. 41) for *P. incompta* (Cab. et Heine), in place of *Myiopatis*, which is shown to be a synonym of *Ornithion*.

The coloured plate contains excellent figures of *Xenopsaris albinucha*, *Thripophaga cherriei*, and *Saltator orenocensis*. The occurrence so far north of *Xenopsaris* (hitherto known only from Argentina) is quite a surprise to us.

79. '*Bird-Lore*.'

[*Bird-Lore*. Edited by Frank M. Chapman. The Macmillan Co., Harrisburg, New York, and London.]

We have before us the third volume of this American bi-monthly ornithological magazine for 1901, and the numbers up to May of the present year. Primarily '*Bird-Lore*,' which appears to be the organ of the Audubon Society, appeals to American readers; but there is a great deal of matter which should interest a wider circle, and many of the numerous illustrations are of great beauty. We may instance those to the chapter by Mr. F. M. Chapman on a breeding-place of the Brown Pelican in Florida; Mr. F. A. Lucas's Walrus Island, in Bering Sea, with its denizens, the Guillemots, Gulls, and Cormorants; the Editor and the veteran Mr. Burroughs finding and photographing the nests of Humming-birds; and Mr. H. W. Henshaw's first impressions of Hawaiian birds. These are some of the more important photogravures as regards size and the general interest of the accompanying letterpress; but the snapshots of smaller birds from life are very effective. The tendency of the work is distinctly educational, and its aim is to foster observation, especially by means of the camera, instead of mere collecting. Mr. Chapman's exposition of the working of the electric perch, by which the bird takes its own portrait as soon as it alights, deserves attention, though not unknown to a select few of our photographers on this side. The annual subscription to this sympathetic work is only a dollar.—H. S.

80. *Boutourline on the Game-Birds of the Russian Empire*.

[Synoptical Tables of the Game-Birds of the Russian Empire. By S. Boutourline, Member of the Society of Naturalists, &c. Edited by N. Anofrief. Petersburg, 1901. 4to. 126 pp.]

For some notes on the contents of this Russian memoir we are indebted to the kindness of Mr. Delmar Morgan, who informs us that the introductory remarks treat of the practical and scientific importance of Ornithology, the necessity for accurate classification, and the want of a

generally available system for the whole of Russia (European and Asiatic). The author's chief object is to encourage bird-hunters in all parts of Russia, and especially in the Asiatic provinces, to cultivate Ornithology. He disclaims completeness for the present work, and refers the reader for more detailed information to Prof. Menzbier's book 'The Birds of (European) Russia,' and to the 'Birds of Europe,' by Holodkofsky & Lifantief, in course of publication in parts. The system adopted in these tables is to co-ordinate the distinguishing characters of two types of each variety or species, leaving the collector or observer to classify his specimens according as these assimilate to one or the other type. Intermediate specimens are of great interest from various aspects, such as geographical distribution, palæontology, and the origin of species. To these must be added differences due to hybridization (very common among the *Gallinaceæ*), influence of climate, sex, age, and season. With these last the tables are not concerned. As a handbook for the Russian sportsman and collector in remote parts of the Empire, where books are difficult of access, M. Boutourline's tables will probably be found useful.

81. *Clarke on the Migration of Birds.*

[Bird Migration in Great Britain and Ireland. Fourth Interim Report of the Committee consisting of Prof. Newton (Chairman), Rev. E. P. Knubley (Secretary), Mr. John A. Harvie-Brown, Mr. R. M. Barrington, and Mr. A. H. Evans, appointed to work out the details of the Observations of Migration of Birds at Lighthouses and Lightships, 1880-87. Rep. Brit. Assoc. Glasgow, 1901.]

This Report contains an account of the migrations of the Skylark (*Alauda arvensis*) and of the Swallow (*Hirundo rustica*), worked out similarly to those of former species (see 'Ibis,' 1901, p. 325) by Mr. W. E. Clarke with his usual accuracy and comprehensive grasp of the subject. A serious deficiency of data is noted with regard to the South Coast of England, but the subsequent visit of Mr. Clarke to the Eddystone Lighthouse ('Ibis,' 1902, p. 246) has resulted in the acquisition of much further information.

82. *Finn on Indian Ducks.*

[How to know the Indian Ducks. By Frank Finn, B.A. (Oxon.), F.Z.S., M.B.O.U. Sm. 8vo. Calcutta: Thacker, Spink, & Co. 1901. Pp. i-iv & 1-101. Price 2 Rs. 8 Ans.]

This pamphlet chiefly consists of reprints of articles from the 'Asian' of 1898 and 1899, and treats in Mr. Finn's well-known popular style of Ducks in a very wide sense, as the author includes therein the Cygninæ, Anserinæ, Merginæ, and Anatinæ. The Indian species, though most of them breed in Northern and Central Asia, comprise about a quarter of the entire family Anatidæ; while most of the residents build in trees, and are remarkable for the scanty supply of down in their nests. The vernacular names are given as an assistance to identification, and appendices are added containing (1) a diagnostic table, (2) a table of colours of full-plumaged males, (3) remarks on the treatment of Ducks in confinement.

83. *Finsch on a new Bornean Bulbul.*

[Ueber eine neue Art Haarvogel aus Central-Borneo von Dr. O. Finsch. Notes Leyden Mus. xxiii. pp. 95, 96.]

Poliolophus nieuwenhuisi, from Central Borneo, is allied to *Brachypodius (Micropus) melanocephalus*, and is dedicated to its discoverer Dr. Nieuwenhuis, who has done good work for the Leyden Museum in Borneo.

84. *Godman's 'Biologia Centrali-Americana.'*

[Biologia Centrali-Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. DuCane Godman. (Zoology.) Parts CLXIX.-CLXXI. 1901-02. (R. H. Porter.)]

The three portions lately issued of the "Birds" of this important work commence with the Boatbills (Cancromidæ), which, in accordance with Mr. Ridgway's views, are regarded as forming a family apart from the Herons (Ardeidæ). The Central-American representative, *Cancroma zeledoni*, is recognised as distinct from the Southern *C. cochlearia*, but we suspect that intermediate forms may yet be found.

To the Cancromidæ succeed the Storks (Ciconiidae) with two Central-American species, the Spoonbills (Plataleidae) with one, the Ibises (Ibididae) with four, and the Flamingos with one representative in this part of the world. The Anseres follow, and good progress is made with the Columbæ.

Excellent coloured figures are given of *Leptoptila plumbeiceps*, *L. cerviniventris*, *L. cassini*, *L. rufinucha*, and *Geotrygon lawrencii*.

85. *Goeldi on Amazonian Birds.*

[Album de Aves Amazonicas organizado pelo Dr. Emilio A. Goeldi. 1^{mo} fasc. 1901.]

Dr. E. A. Goeldi, Director of the Pará Museum of Natural History and Ethnography, who is always endeavouring to spread the knowledge of Natural History in his adopted country, has recently issued the first part of an "Album" of Amazonian Birds. It contains twelve coloured plates, on which are depicted some of the most characteristic species of the feathered inhabitants of the country, associated in groups of allied forms. The work is intended as a sort of illustrated supplement to the author's lately completed 'Aves do Brasil' (cf. 'Ibis,' 1901, p. 501).

86. *Hagmann on the Zoological Garden at Pará.*

[Der Zoologische Garten des Museu Goeldi in Pará (Brasilien), mit besonderer Berücksichtigung der Tierbeschaffung, von Dr. phil Gottfried Hagmann. 8vo. Frankfurt a. M., 1901. 55 pp.]

Dr. Hagmann gives an interesting account of the Zoological Garden attached to the Goeldi Museum at Pará, which is said to be one of the great attractions of that flourishing city. The institution was founded in 1893 as the "Museu Paraense," but subsequently had its name changed to "Museu Goeldi," in honour of its energetic Founder and Director, Dr. E. A. Goeldi.

The various buildings in the Garden and their inhabitants are described, and a systematic list is given of the Vertebrate Animals exhibited during the past six years. Among the birds we observe the names of *Harpyia destructor*, *Nothocrax urumutum*, *Heliornis fulica*, and of three species of *Psophia*.

87. Hellmayr on South-American Birds.

[(1) Zur Revision der Gattung *Polioptila*. Von C. E. Hellmayr. Nov. Zool. viii. pp. 356-361.

(2) Ueber einige Arten des Genus *Thryophilus*. Von C. E. Hellmayr. Verh. k. k. zool.-bot. Ges. Wien, 1901, pp. 767-776.

(3) Revision einiger neotropischen *Turdidæ*. Von C. E. Hellmayr. J. f. O. 1902, pp. 44-69.]

An active young ornithologist is now at work at Vienna on South-American and Palearctic Birds. One of us had the pleasure of making his personal acquaintance there last autumn, where he was engaged in work at the Imperial Museum of Natural History. With every wish to encourage Herr Hellmayr in his devotion to our science we may venture to say that he seems to us to be inclined in some cases to base his species and subspecies on rather slender characters.

In the first of the papers of which we have given the titles above he describes a new species (*P. herlepsi*) and a new subspecies of *Polioptila*, and adds critical remarks on other members of this well-marked Neotropical genus.

In the second he revises the Wrens of the genus *Thryophilus* allied to *T. leucotis*, and arranges the group under six species, besides subspecies.

In the third paper he devotes his attention to the Neotropical Thrushes, and discusses *Catharus* and the groups of *Turdus grayi*, *T. ignobilis*, *T. crotopezus*, *T. albiventer*, *T. phæopygus*, *T. fumigatus*, *T. flavipes*, and *T. fuscater*. Several new subspecies are indicated.

We wish that Herr Hellmayr would give up the ugly method of designating the typical form of a species by repetition of the specific name. *Turdus ignobilis ignobilis* is certainly not an elegant expression, *Turdus ignobilis typicus* is neater and quite as correct.

88. Hellmayr on Palearctic Birds.

[(1) Eine neue Graumeisenform aus Italien. Von C. E. Hellmayr. Ornith. Jahrb. xii. pp. 110, 111.

(2) Untersuchungen über einige paläarktische Vögel. Von C. E. Hellmayr. Ornith. Jahrb. xiii. pp. 26-43.]

In his papers on the Palearctic Birds Mr. Hellmayr also

appears to us to be too much given to the fashionable practice of making new "subspecies." The various forms of *Parus* are, no doubt, not easy to deal with, but the differences between the local forms are by no means constant, and it is very difficult, if not impossible in many cases, to assign specimens to a particular form without a knowledge of their localities.

Mr. Hellmayr reviews the local forms of *P. montanus*, *P. communis*, and *P. ater*, and separates some new subspecies.

The author also shows that *Turdus orientalis* Mad. is intermediate between *T. torquatus typicus* and *T. t. alpestris*.

89. Herrick's 'Home Life of Wild Birds.'

[The Home Life of Wild Birds : 'a New Method of the Study and Photography of Birds. By Francis Hobart Herrick. With 141 Original Illustrations from Nature by the Author. 4to. London, 1901. Pp. xx, 149. Putnam's. Price 10s. 6d.]

Mr. Herrick's studies have been chiefly carried out in Central New Hampshire and relate for the most part to the more common American species. They are, however, none the less welcome on that account, and portray with great accuracy the birds and their habits at the nest. Being desirous of shewing them as they really are and their behaviour in the open air rather than under constrained conditions or in cages, the author contrived a new method of study, which he practised for two summers. Instead of going to the birds, he virtually made the birds come to him, and ensured their tameness before taking their portraits. In the case of some twenty-six species the nest was first watched to determine the period and details of incubation; the young, when hatched, were next carefully observed, and, when they were considered old enough, the nest and its surroundings were often bodily removed and set up at some convenient spot, where a movable tent was erected to screen the observer and his camera. Special chapters on "Fear in Birds" and "Taming without a Cage" shew how soon the birds became familiarized with their new surroundings; while the result of no less than five or six hours' daily watching was the acquisition of a fine series of

Plates of the parents and young under all manner of circumstances, though the effect of the pictures is somewhat spoilt by the portions not in focus. Special devices were needed when the ground was marshy or otherwise unfit for the work.

90. *Martorelli on Athene chiaradiæ.*

[Nota ornitologica. Ulteriori osservazioni sull' *Athene chiaradiæ*, Giglioli, del Prof. Giacinto Martorelli. Atti Soc. Ital. Sci. Nat. xl.]

This paper contains particulars concerning the remarkable form of Owl recently discovered in Udine, Italy, and described by Prof. Giglioli as *Athene chiaradiæ*. It would seem to be a sport of *A. noctua* rather than a veritable species; but Prof. Giglioli has promised us an article upon this interesting bird for 'The Ibis,' which will, no doubt, give us full information.

91. *Naumann's 'Birds of Middle Europe.'*

[Naumann, Naturgeschichte der Vögel Mitteleuropas. Herausgegeben Dr. Carl R. Hennicke. Bande ii.-vii., x. Folio. Gera-Untermaus, 1897-1902. (Price 1 M. each Lieferung.)]

Every ornithologist who has devoted himself to European birds must be well acquainted with Naumann's 'Naturgeschichte der Vögel Deutschlands,' which, though published as far back as 1822-53, still remains a standard work of the best description. Until recently no second edition had been published, but a revised edition, bringing the subject up to date, is now being issued under the title 'Naumann, Naturgeschichte der Vögel Mitteleuropas.'

Several volumes of this have, we understand, already appeared; but of these we have only received one for review, namely the third, which embraces the Wagtails, Larks, and Finches. The number of authors and artists employed on the work reaches, according to the titlepage, the somewhat alarming total of 37, all working under the editorship of Dr. Carl R. Hennicke, of Gera, so that it may be taken for granted that the various articles will scarcely be of equal value. In the present volume, however, the work is executed

with commendable care and accuracy, the general arrangement of Naumann having been pretty closely followed. The various foreign names, a careful synonymy, and full descriptions of the birds with their habitats, habits, food, and nidification, their enemies, the mode of their capture, their use—and the contrary if they are destructive—are all fully given. Subspecies are referred to, but fortunately not fully treated of, for it appears that of the Crested Lark alone eighteen subspecies have already been described and named, though in the present work only two, *G. cristata* and *G. thecklæ*, are included as valid. The plates are, on the whole, good; but, as five artists have been employed, they are rather varied in execution, those of Mr. Keulemans being by far the best, while those of Pastor Kleinschmidt, though somewhat stiff, are accurate and fairly artistic. The third volume consists of 391 pages of letterpress, 43 chromolithographic plates of birds and 5 of eggs, and as the price is only sixteen shillings it is indeed a marvel of cheapness and a work that we can safely recommend to our readers. We only regret that it has not been issued in the handy octavo form of the original work, for large folio volumes such as these are heavy and far less convenient for reference-purposes.

92. Oustalet and Claybrooke on the third Ornithological Congress at Paris.

[III^e Congrès Ornithologique International, Paris.—26-30 Juin, 1900. *Compte Rendu des Séances* publié par E. Oustalet et J. de Claybrooke. 8vo. Paris: Masson et C^{ie}, 1901.]

This volume, which is full of interest to all ornithologists, contains a complete report of the business transacted at the third meeting of the International Ornithological Congress held at Paris in June 1900, and a list of the members present. This is followed by a long series of papers on different branches of our science, among the authors of which we notice the names of Reiser (Birds of Balkan), Johansen (Birds of Central Siberia), Bowdler Sharpe (Birds of Mongolia and Birds of North China), Berlepsch and Stolzmann (New Species from Central Peru), Simon (new Trochilidæ),

and many other noted ornithologists. Dr. Bureau writes on the plumages of Sabine's Gull, and Freiherr v. Berlepsch on the "*Chasse aux grives*" of Central Europe, in the course of which he states that over one million Thrushes are slaughtered every year. More than half of these are Song-Thrushes (*Turdus musicus*).

Coloured figures are given of *Ptilopus huttoni* Finsch (from Rapa, South Pacific) and of a supposed hybrid between *Turdus obscurus* and *T. iliacus* from specimens in the Milan Museum, also a photograph of a tame Humming-bird (*Chlorostilbon splendidus*) which died at Milan after living six months in captivity.

The next Congress, it is stated, will be held in London, with Dr. Bowdler Sharpe as President.

93. *Ridgway on the Birds of North and Middle America.*

[The Birds of North and Middle America. By Robert Ridgway. Part I. Bull. U.S. Nat. Mus. no. 50, 1901.]

We welcome with pleasure the first volume of the long-promised work of Mr. Ridgway on the birds of North and Middle America, and are sure that our friend and fellow-labourer will not take amiss the remarks we here make upon it. In the first place, we are glad that the author has been driven, by stress of circumstances, to commence with the most highly developed birds—the Passeres. It was a great mistake, in our opinion, when certain modern ornithologists determined to begin "from the bottom upwards." One way of treatment, if properly carried out, is, of course, just as correct as the other; but as, up to a recent period, it had always been the practice to commence with the highest forms, it is very confusing to find the lowest types at the top and the Passeres at the bottom.

Mr. Ridgway, we are pleased to say, begins with the nine-primaried Oscinine Passeres, and his first volume is entirely devoted to the Fringillidæ, under which head he includes—not without some reason, we admit—the group that previous authors have usually classed as the Fringilline or Thick-billed Tanagers. Of the huge family Fringillidæ,

not less than 389 species and subspecies are recognised as coming within the limits of "North and Middle America," though, we must say, we think that Mr. Ridgway need not have overburdened his list by including the Galapagos within the area treated of, the Galapagan Avifauna being, in our opinion, quite as nearly related to South as to North and Middle America.

Again, though it cannot be denied that subspecies exist in Nature, and that in some respects the use of them is of advantage, we cannot approve of the enormous increase of trinomials that has lately taken place among the new school of systematists. Seven species of *Carpodacus mexicanus*, for example, are allowed by Mr. Ridgway, and twelve of *Cardinalis cardinalis*. We fully admit the great experience that Mr. Ridgway has gained from the enormous series of specimens before him, but we cannot believe that it would be possible to recognise many of these supposed subspecies without a knowledge of the locality of the specimens. We quite agree with our author when he confesses that trinomials are a "necessary evil," and that binomials are preferable. We shrink from contemplating what the number of "subspecies" will come to be when the birds of other countries shall have been worked up to the same pitch as those of North and Middle America, and we lament the task that will fall on the ornithologists of the future in striving to recollect their names.

In matters of nomenclature Mr. Ridgway adheres closely to the Code of the A.O.U., of which he is such a distinguished member. One of the most objectionable of these rules is that the original misspelling of a name cannot be corrected. Thus Swainson having, from ignorance or from error, called a genus of Pigeons *Leptotila* instead of *Leptoptila*, the first spelling must, according to this practice, be always retained—*obviously* wrong as it is. As we have said before, the rules of grammar and common sense are, to our mind, of far greater importance than the artificial rules of priority, as they are carried out by the new school. So far from conducing to uniformity of nomenclature, such proceedings

only result in establishing greater diversity, for no highly educated man will be inclined to submit to them.

There appears to be one new species described in the present volume, namely, *Geospiza harterti* (p. 507), while the following new subspecies are characterized :— *Carpodacus mexicanus sonoriensis*, *Pyrrhulagra noctis coryi*, *Cyanocompsa parellina sumichrasti*, and *Saltator magnoides medianus*.

94. *Salvadori on new Birds from the St. Thomas's and Prince's Islands.*

[Due nuove specie di Uccelli dell' Isola di S. Thomé e dell' Isola del Principe raccolte dal Sig. Leonardo Fea. Boll. d. Mus. Zool. e Anat. comp. R. Univ. Torino, xvi. no. 414.]

Zosterops feae (hitherto united to *Z. ficedulina*), from St. Thomas, and *Turdus xanthorhynchus*, from Prince's Island in the Gulf of Guinea, are described in this paper. Examples of both were sent to the Museo Civico of Genoa by the well-known collector Fea.

95. *Schalow on the African Ostriches.*

[Ueber die Geographische Verbreitung der Afrikanischen Struthioniden und über ein Hilfsmittel zu deren Erforschung, von Herman Schalow. Ornith. xi. pp. 427-432.]

In this paper the distribution-areas of *Struthio camelus*, *S. australis*, *S. molybdophanes*, and the so-called *S. massaicus* are treated of, and the question whether the first and last of these occur in the districts assigned to the others is considered; skins, eggs, and the literature of the subject are also discussed.

96. *Shufeldt on the Flamingos.*

[Osteology of the Flamingos (Odontoglossæ). Family Phœnicopteridæ, Sp. *P. ruber*. By R. W. Shufeldt, C.M.Z.S. Ann. Carnegie Mus. i. pp. 295-324, pls. ix.-xiv.]

Dr. Shufeldt had before him in compiling this paper a complete disarticulated skeleton of *Phœnicopterus ruber* and a mounted skeleton, both from the U.S. National Museum. These he compares bone by bone with the American Mergansers and other Ducks, Geese, and Swans. After

discussing the views of various authorities he concludes by agreeing with the majority in considering the Flamingos to form an independent group or Suborder, corresponding to Huxley's Amphimorphæ, standing between the Anseres and the Herodiones. Among the Anseres, they come nearest to certain Geese; while they have borrowed characters from a number of Grallatorial forms, such as *Platulea*, the *Ibididæ*, and *Tantalus*, though they do not approximate closely to such genera as *Ardea*. The six plates represent various bones and the skeleton of *Phænicopterus ruber*.

97. *Silloway on the Birds of Flathead Lake.*

[Summer Birds of Flathead Lake. By P. M. Silloway. Bull. Univ. Montana, no. 1, pp. 1-83, pls. i.-xvi.]

Mr. Silloway's observations were chiefly made from June 14th to August 30th, 1900, but were supplemented by others made in 1901. They comprise a list, admittedly not yet complete, of the birds of the Flathead Lake district in Montana, and a series of very interesting notes on its Oology. A hundred and twenty-eight species are reported, of which all but eight probably breed in the district. Fourteen plates of nests and eggs are added, with two views of the surroundings of the Biological Station. The neighbouring country is admirably suited to bird-life, with its mountains, woods, bushy and marshy areas, and open prairies.

98. *Southwell on Browne's 'Natural History of Norfolk.'*

[Notes and Letters on the Natural History of Norfolk, more especially on the Birds and Fishes. From the MSS. of Sir Thomas Browne, M.D. (1605-1682) in the Sloane Collection in the Library of the British Museum and in the Bodleian Library, Oxford. With Notes by Thomas Southwell, F.Z.S., &c. London: 1902 (Jarrold & Sons). 8vo. Price 6s. net.

In choosing a title for this nice little book, Mr. Southwell hardly does justice to its contents, for though, as was natural, Sir Thomas Browne's Notes and Letters chiefly concern the county of his adoption and abode, many of them have a very general bearing, and will be read with as much interest by any

dweller in "the Shires," or even outside of this country, as by a truly Norfolk man. Most British ornithologists must have heard of, or even seen reference made to, the observations in Natural History by the celebrated author of the 'Religio Medici,' the 'Hydrotaphia,' and the 'Pseudodoxia Epidemica' or Vulgar Errors; but few have had the patience to dig them out from the four-volume edition of his collected works by Wilkin, or the smaller reprint in three volumes issued some ten years later, in which these observations lie buried. Moreover, when found they obviously needed more annotating than they had received, though it must be allowed that comparatively few errors of commission had been made by their then Editor and his friends.

The original cast of mind so characteristic of all Browne's greater works is just as clearly shewn in these "diversions of his pen"—the phrase applied by one of his early editors to his 'Miscellany Tracts,'—and is as true of the one as of the other. Indefatigably as he pursued his profession, he seems never to have let slip an opportunity for observation, and hence we have in this little volume a very large proportion of facts recorded for the first time. True it is that the most important of them have been copied, or at least mentioned, by later writers; but that does not detract from the interest with which they are here to be read in Browne's own words, and, thanks to Mr. Southwell's care, in Browne's own spelling.

There can be no doubt that, though it was not for Merrett's information that Browne first began to set down these notes, he continued them with the object of their serving that author in a revised edition of his 'Pinax Rerum Naturalium'—the book which contains the earliest list of British Birds. For some reason, which is not clear, that revised edition never appeared, and great is our loss in consequence, for it must be remarked that what we have here is not the fair copy of the Notes sent to Merrett, but only the draughts or rough copy. The same may be said to some extent of the Letters, and it is possibly from that cause that the handwriting is so terribly hard to read, and

in the rough copy of one letter, of which a photographic representation is given, is almost illegible.

As might be expected of so learned a man, Browne had a fair acquaintance with the literature of his subject. Among ornithological authors, Turner, Gesner, Belon, and Aldrovandus are all cited, as well as Clusius; but the book he knew best was the compilation of the Scoto-Pole Jonston, which began to appear in 1650, and in the course of a few years saw several editions. Mr. Southwell has been most diligent in verifying these references, and his admirably judicious notes, voluminous as in places they may seem, cannot be said to contain a word too much, for all are to the point. We venture to predict that this little book, of which we understand that the number of copies printed is but small, will be eagerly sought for, and that before long.

99. *Tschusi zu Schmidhoffen on the Red-spotted Blue-throat in Bohemia.*

[Ueber das Vorkommen des rotsternigen Blaukeblchens im Elbethale. Von Victor, Ritter v. Tschusi zu Schmidhoffen. Ornith. Monatsb. 1902, pp. 22-24.]

The author here reports the occurrence of a large number of Red-spotted Blue-throats in the central mountains of Bohemia. Those noticed were chiefly males, but the bird is known to have bred in this district.

100. *Witherby's Bird-hunting on the White Nile.*

['Bird-hunting on the White Nile.' A Naturalist's Experiences in the Soudan. By Harry W. Witherby. 8vo. London, 1902. 'Knowledge' Office. 117 pp. Price 2s. 6d.]

This little book is a reprint (with additions and corrections) of Mr. Witherby's popular account of his experiences on the White Nile in the spring of 1900. It is nicely illustrated from photographs, and is well worthy of perusal, particularly by those who contemplate similar expeditions. A list of the birds met with is given in an appendix. We need hardly remind our readers that Mr. Witherby's scientific account of the collection made on the White Nile was published in this Journal in 1901.

XXXI.—*Obituary.*

DR. EMIL HOLUB, Herr CARL EULER, Lt.-Col. the Rt. Hon.
E. H. COOPER, and Lord MALCOLM.

DR. EMIL HOLUB, the well-known African traveller and collector, died at Vienna on the 21st of February last, in the 55th year of his age. Dr. Holub was a native of Bohemia and of Czech descent. He was educated as an apothecary, but emigrated early in life to South Africa, and practised as a doctor at Kimberley and elsewhere. His original inducement to penetrate into the far interior of the country was his ardent taste for Natural History, especially Ornithology, to the pursuit of which his first seven years of travel were mainly devoted. His journeys were described in his '*Sieben Jahre in Süd-Afrika*' (Wien, 1881), a work which was translated into English and published in London. In conjunction with the late Freiherr v. Pelzeln, the collection of birds made on this occasion was described by him in a volume entitled '*Beiträge zur Ornithologie Südafrikas*' (Vienna, 1882)*. Dr. Holub subsequently returned to South Africa, and made a more extended expedition into the Marotse and Mashukulumbé countries north of the Zambesi, now forming part of Northern Rhodesia. During his four years' wanderings on this occasion (1883-87) a large collection of native arms and implements, as well as of natural objects, was made, and was exhibited at Vienna on his return to Europe. This journey was described in his work '*Von der Capstadt ins Land der Maschukulumbé*' (2 vols., Vienna, 1890).

CARL EULER, the well-known Brazilian ornithologist, died at Rio de Janeiro on the 27th of November, 1901. He was born at Basel, in Switzerland, in 1834, and after finishing his studies at the Gymnasium there, emigrated to Brazil in 1853, and settled at the German colony of Cantagallo, in the province of Rio. Here he became Swiss Vice-Consul and owned a large farm called the Fazenda do Bom Vallé,

* For notice of this work, see '*Ibis*,' 1882, p. 462.

while he spent all his leisure time on the study of the birds of the surrounding district. Entering into relations with Dr. Cabanis, of Berlin, Euler contributed to the '*Journal für Ornithologie*' a series of excellent field-notes on the birds of Brazil and their nesting-habits and eggs, which were commenced in 1867 (see *J. f. O.* 1867, p. 177). In 1877, not being able to continue his work at Cantagallo, Euler moved to Rio de Janeiro, and subsequently prepared the new edition of his ornithological papers, which was published by Dr. v. Ihering (to whom we are mainly indebted for these notes on Euler's life) in the fourth volume of the '*Revista do Museu Paulista*' (see '*Ibis*,' 1901, p. 132).

Of Euler's collections, some went to the Museum at Berlin and others to the National Museum at Rio. Euler was an excellent field-naturalist and observer, but had little disposition for strictly scientific ornithology.

Lt.-Col. the Rt. Hon. EDWARD HENRY COOPER, P.C., of Markree Castle, Colloony, Sligo, and 42 Portman Square, London, who died on February 26th last, became a Member of the B.O.U. in 1880. He began experiments with a view to introducing the Black Grouse on his Irish estates more than thirty years ago, and at first obtained specimens from Scotland. More recently he imported examples of the same species from Norway. But although in both cases the birds survived for a few years, they never bred, and eventually died out, as Capt. Barrett-Hamilton has recorded (see '*Irish Nat.*' viii. pp. 41, 43). Col. Cooper was equally unsuccessful with similar attempts to introduce into Ireland Capercaillies, Reeves's Pheasants, Hawfinches, and other birds.

JOHN WINGFIELD, first Baron MALCOLM OF POLTALLOCH, who died on the 6th of March last, was born in 1833, and educated at Eton and Christ Church, Oxford. He was Lieut.-Col. commanding the Argyll and Sutherland Highlanders Volunteer Battalion, and M.P. for Argyllshire from 1886-1892. Lord Malcolm was elected to the B.O.U. in

1875, having displayed considerable interest in Ornithology, and being the possessor of a noted collection of birds, which he had inherited from his father. The specimens of this collection were set up by Leadbeater, and from him, in all probability, was purchased an egg of the Great Auk at a price which in these days would seem ridiculous (from £1 to £3, it is said, but accounts vary). Lord Malcolm, though very fond of birds, was not given to writing upon them, and his name does not appear among the contributors to our columns.

XXXII.—*Letters, Extracts, Notices, &c.*

WE have received the following letters addressed to "The Editors":—

SIRS,—I think that it will not be without interest to the readers of 'The Ibis' to know that H.M. Vittorio Emanuele, our present King, has disposed of the ornithological collection that his grandfather, Vittorio Emanuele II., put together at Mandria, not far from Turin. The collection had been removed to the Castle of Moncalieri, and quite recently it was divided between the Museum of Turin and that of Rome. The birds allotted to the latter museum include the well-known specimen of *Alca impennis*, which Victor Emanuel, the grandfather, had bought from the collection of Pastor Brehm. The series presented to the Museum of Turin contains, among other rarities, a specimen of *Cerionis caboti*, which has been the subject of a small paper of mine published in the 'Proceedings of the Zoological Society of London' for 1871 (pp. 495-496); but the rarest bird is a *Garrulus lidthi*, of which only three specimens are known, and which I have mentioned in another paper of mine, "Nota intorno al *Garrulus lidthii*" (Atti R. Ac. Sc. Tor. vii. 1872, pp. 473-476). Of this species two living specimens were brought from Japan and given to King Victor Emanuel. It would be interesting to know what has become of the second specimen, which, on its sale at

Florence, was bought by the late M. Vekemans, Director of the Zoological Garden of Antwerp. Even at the present day we are ignorant of the exact locality inhabited by this rare Jay.

Yours &c.,

T. SALVADORI.

Turin Zoological Museum.

22nd March, 1902.

SIRS,—Having long paid particular attention to Baer's Pochard, I was much interested in Mr. J. G. Millais's note in 'The Ibis' for last January (p. 192) on the courtship of the species. As a matter of fact, I briefly drew attention to the gesture which he describes some years ago (Journ. As. Soc. Beng. 1897, p. 527), and later recorded that it was common to the female of the species (Proc. As. Soc. Beng., April 1878).

Since then I have seen the male White-eyed Pochard (*Nyroca ferruginea*) jerk back its neck in a precisely similar manner to its near ally; but as the neck in this species is shorter and thicker than in *Nyroca baeri*, the general effect is far less striking. I have not seen the female White-eyed Pochard indulge in this backward jerk of the neck, but she will probably prove to possess the habit, since the so-called pairing-gestures of male birds are very often shared by the females, being indeed in many cases apparently the expression of several emotions and proper to the whole species. Everybody must have noticed the nodding of the head in the domesticated Mallard, and the erection of the crest and expansion and swinging of the tail in the Muscovy Duck, signs of emotion common to both sexes.

Returning to Baer's Pochard, it may interest your readers to know that this species has not appeared in our Bazaar this winter.

Yours &c.,

F. FINN.

Indian Museum, Calcutta.

10th April, 1902.

SIRS,—Judging from the editorial note in 'The Ibis,' April 1902, p. 353, it has come upon the Editors as a shock

that Ritter von Tschusi should have ventured to re-name the British Dipper.

I should like to point out that Dr. Sharpe, in the 'Catalogue of Birds,' vol. vi. p. 309 (1881), had already stated "that to the experienced eye the English specimens form an easily recognisable race"; and that at Tring we have long ago appreciated the differences. If Dr. Sharpe were re-writing the above-cited volume, I feel sure that he also would now allow the British Dipper's right to a new name; for, after all, Ritter von Tschusi, by giving a subspecific name to this bird, is only expressing in a different and more concise way what Dr. Sharpe wrote twenty-one years ago.

Yours &c.,

Zoological Museum, Tring, Herts.

WALTER ROTHSCHILD.

29th April, 1902.

SIRS,—You conclude one of your notices in your last number (above, p. 351) with the words "What was the Cahow?" I thought this question had been answered half a century ago! I have never heard a doubt about it expressed by any ornithologist who knew anything of the Bermudas. I lived myself in the islands from 1846 to 1849. In 1847 I wrote to the late Sir W. Jardine, stating that from what the fishermen had told me of the Cahow (which was well known to them) I believed that it would prove to be one of the Petrels (Jard. Contr. to Ornith. 1849, p. 79). I afterwards, in company with the late Sir J. Campbell Orde, obtained specimens of the bird and some of its eggs near the Cooper Islands. The late Col. H. M. Drummond-Hay and Lt.-Col. Wedderburn also procured specimens of it, as did Mr. Hurdis. No doubt there are even now a few pairs still lingering about the home of their ancestors. I observe that Mr. Verrill has misquoted Mr. Hurdis, who says that the Shearwater, *Puffinus obscurus* (with which *P. auduboni* is rightly identified by Mr. Salvin), is still known by the fishermen as "the Cahow." See also Jones, 'Naturalist in Bermuda,' p. 94. In 1874 Capt. Reid, R.E., found a

few pairs of this bird with two nests. Unless ruthless visitors have exterminated them very recently, they still visit the Bermudas in the breeding-season. I may add that the eggs, which were about the size of a small hen's egg, are very smooth and shiny. Happily the Dusky Shearwater has many other breeding-haunts, so that there is no fear of its universal extinction at present. But I have said enough in refutation of Mr. Verrill's dogmatic statement that the Cahow was certainly *not* a Shearwater.

Yours &c.,

College, Durham.

H. B. TRISTRAM.

8th April, 1902.

[We regret to have been misled by Mr. Verrill. The Cahow question has already been discussed in the 'Dictionary of Birds' (p. 831), which we had quite overlooked.—EDD.]

Fertilization of Plants by Birds.—We all know that insects play a most important part in the fertilization of plants, but it is a more recent discovery that birds also in some cases perform the same function. In a paper on New Zealand Flowers read at the meeting of the Linnean Society of London on February 20th last, by Mr. G. M. Thomson, some observations were made on the birds which visit them and appear to help in cross-fertilization, *e.g.*, the Korimako (*Anthornis melanura*), the Grey Warbler (*Gerygone flavirostris*), the Pied Fantail (*Rhipidura flabellifera*), and the Yellow-breasted Tit (*Petræca macrocephala*). Of these the Korimako was ascertained to assist in the fertilization of the native fuchsias, on quitting which it was observed that the bird had its head stained with the bright blue pollen of the flowers.

New Name for the British Wren.—We have already recorded the bestowal of a new name on the British Dipper (see above, p. 353), and have now a fresh surprise for our ornithological friends. The British Wren, we are told, ought to be called

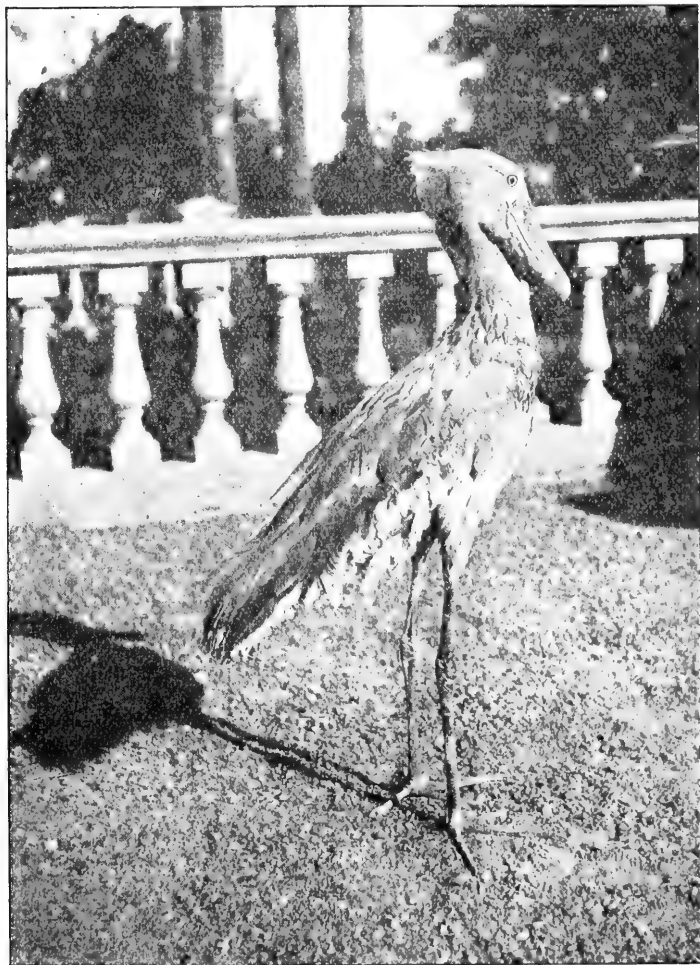
"*Olbiorchilus troglodytes troglodytes* (Linn.)"! Mr. Oberholser ('Auk,' 1902, p. 175) maintains that the section of the Wrens to which the British species belongs is not entitled to the name "*Anorthura*" assigned to it in the 'Catalogue of Birds,' because "*Anorthura*" is the strict equivalent of *Troglodytes*, and *Troglodytes* is properly applicable to the American group of Wrens typified by *Troglodytes ædon*. He therefore proposes for *Motacilla troglodytes* of Linnæus the new generic name *Olbiorchilus*, and, in accordance with the trinomialism now in fashion, the British Wren becomes *Olbiorchilus troglodytes troglodytes*!

To this we reply that ordinary common sense is sufficient to teach us that the type of the genus *Troglodytes* of Vieillot was intended to be *Motacilla troglodytes* Linn., although Vieillot, when he first mentioned the genus in his 'Oiseaux de l'Amérique Septentrionale' (ii. p. 52), naturally enough, only referred to the American species. But on turning to Vieillot's List of Genera in his 'Analyse,' it will be found that the "*Troglodyte*" of Buffon (= *Motacilla troglodytes* Linn.) is placed first in his list of species of *Troglodytes* and *Troglodytes ædon* second. It cannot, surely, be denied that Vieillot has here pointed out what was his obvious intention in the plainest manner. We therefore venture to reject Mr. Oberholser's view that *T. ædon* is the typical species of the genus *Troglodytes*, and we shall continue to call our British Wren by its time-honoured name. Even if the contrary opinion be held to be correct according to the rules of nomenclature adopted by the A.O.U., we do not see the necessity of separating *Troglodytes ædon* and its allied forms from *T. parvulus* generically.

Baleniceps at Khartum.—Mr. W. A. Milner has kindly sent us a copy of a photograph of *Baleniceps rex*, lately taken from a specimen living in the Sirdar's Palace Garden at Khartum. This bird, after being "winged," was captured alive on the White Nile by Col. Sparkes and presented to Lady Wingate. It will be recollected that two living

examples of this wonderful form were brought home by Petherick in 1860, and lived for some time in the Zoological

Fig. 14.



Balaniceps rex.

Society's Gardens. We have not heard of any living specimens having been obtained since that date.

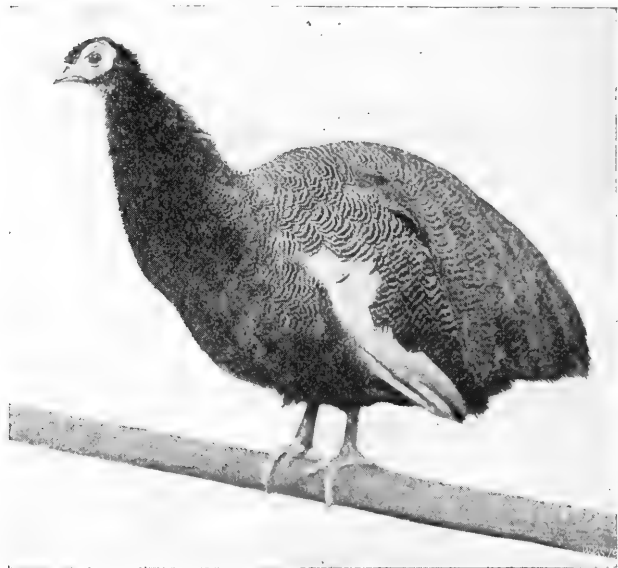
Birds on the Black Sea in Winter.—Mr. Jack Chapman, writing from Souvoraski, at the north-east corner of the Black Sea, says:—"During the whole of the winter there are great quantities of Honey-Buzzards here, but what they feed on during the very cold weather I cannot understand. Crowds of Hen, Marsh, and Montagu's Harriers also spend the winter here, and are very interesting to watch. So far as I can make out, when the ground is soft they live on the ants and mole-crickets which are passing the winter just under the surface. When it is hard weather large quantities of Larks and other small birds collect in flocks near the river. It is then very interesting and exciting to watch the Harriers. They fly slowly up wind for two or three hundred yards; then turn round and come full speed down wind close to the ground, and as they dash through the crowds of small birds, catch any one that is unlucky enough to get directly in the way. If they fail to kill they repeat the performance. They hardly ever follow a bird—I presume, because they are not active enough on the wing to catch one if they did. However hard the weather, the Honey-Buzzards do not seem to trouble about the small birds; but I have seen them on occasions follow up a Duck that I have badly wounded and eat it when it has fallen, much to my disgust. During the autumn great flocks of Hobbies stay here for a time, but they all go away before the cold weather comes. There have been a pair of birds here the whole winter that I should very much like to know the name of. They are Geese, and the whole of the breast is quite red. They may be Ruddy Sheldrakes, but, from what I can remember of one I shot last year, that bird is no bigger than the ordinary Sheldrake, while this Goose, as I presume it to be, is considerably larger."

[The Goose is obviously *Anser ruficollis*, which is well known to visit the Caspian and Black Seas in winter, and occasionally to go as far south as Egypt.—EDD.]

Hybrid between Peacock and Guinea-fowl.—We are indebted to the proprietors of 'The Field' for the use of the

annexed engraving, from a photograph taken by Mr. Payne of Aylesbury. It represents a very remarkable bird, now in the possession of the Hon. Walter Rothschild, M.P., which is stated to have been bred between a white Peacock and a hen Guinea-fowl. The head and neck give incontrovertible

Fig. 15.



Hybrid between male Pea-fowl and female Guinea-fowl.

evidence of the Peacock sire, the white plumage of which is shown in the primaries of the wings. The rest of the plumage is that of the female parent, the Guinea-fowl. This bird was obtained from France by Mr. Castang, and kept by him until it had moulted in the usual season, before it was added to Mr. Rothschild's museum.

THE IBIS.

EIGHTH SERIES.

No. VIII. OCTOBER 1902.

XXXIII.—*A List of the Birds of Lucknow.* By WILLIAM JESSE, M.A., F.Z.S., M.B.O.U. (Member of the Bombay Natural History Society).

[Continued from p. 490.]

No. 362. LOCUSTELLA STRAMINEA. *Turkestan Grasshopper-Warbler.*

According to the late Mr. George Reid, this Warbler frequents the grass and tamarisk-jungle of the Gogra near Byramghat, and similar low-lying grass-land on the banks of the Ganges, Goomti, and Sail, but is numerically rare and difficult to procure.

Mr. Reid writes :—"The only specimen I have, I captured alive after a good deal of trouble in trying to get a fairly distant shot at it. I had already blown two to pieces, when I saw the bird suddenly sneak into a small patch of 'doob' grass, and rushing up I caught it between the rooting runners of the grass and the ground, so tightly squeezed in that I had some difficulty in getting it out."

No. 363. *ACROCEPHALUS STENTOREUS. *Indian Great Reed-Warbler.*

Evidently not uncommon in the jheel district near Ajgaen, whence the Museum collector has obtained several specimens. Not improbably it has been overlooked. I think that it departs after the cold weather, but I am not sure.

No. 366. *ACROCEPHALUS DUMETORUM. *Blyth's Reed-Warbler.*

A cold-weather visitant. All I know about it is that there are three skins (♂) in the Museum, one from Lucknow and two from Ajgaen.

No. 374. ORTHOTOMUS SUTORIUS. *Indian Tailor-bird.*

Phutki [H. Lucknow].

The Indian Tailor-bird is a common and permanent resident, being found in gardens, hedge-rows, topes, and jungle of all kinds; but, on the whole, I think that it prefers cover near human dwellings. It has a pretty note—hardly a song—which, to those that know it, discloses the whereabouts of the bird when it would otherwise be passed over. The nest is too well known to need description, but is almost always composed of two leaves only, and, according to my experience, is invariably lined with cotton-down. Brinjal, guavas, and crotons are favourite nesting-places. The breeding-season lasts from March to August, but the greater number of nests will, I think, be found in June and July.

The following are some of the dates in my diary:—

Mar.	31.	Nest in a croton-plant.	4 fresh eggs.	(Fyzabad.)
April	4.	Nest ready for eggs.		
May	26.	Nest building.	3 fresh eggs.	June 3.
June	8.	Nest in a croton-plant.	4 fresh eggs.	
July	17.	„	5	„
Aug.	10.	„	5	„

The eggs are of three, or possibly more, varieties: (a) white, with red blotches; (b) white, faintly speckled with red; (c) blue, blotched with red.

Average of 4 (blue) Lucknow eggs.

Average measurement	.....	·65" × ·46"
Measurement of largest egg	.....	·69" × ·48"
„ smallest egg	.....	·63" × ·43"

Average of 9 (white) Lucknow eggs.

Average measurement	.....	·64" × ·46"
Measurement of largest egg	.....	·70" × ·48"
„ smallest egg	.....	·64" × ·43"

No. 377. LUSCINIOLA MELANOPOGON. *Moustached Sedge-Warbler*.

I have never actually shot and handled this species, so will quote Reid's remarks :—

"The Moustached Sedge-Warbler is fairly common in all suitable localities, but only, I think, during the cold weather. In the low-lying grass-covered lands here and there on the banks of Goomti, in the grass and tamarisk-jungle or the semi-swamps about Byramghat, and in similar localities on the Khadir lands of the Oudh bank of the Ganges, it is not uncommon ; while a few may sometimes be found in rushy swamps and nooks on such rivers as the Goomti and Sail. From its skulking habits, it is difficult to get a fair shot at it, unless at very close quarters, when it generally gets mangled almost beyond recognition."

No. 381. CISTICOLA CURSITANS. *Rufous Fantail-Warbler*.

Phutki [H.]. Tic-tic [Anglo-Indian boys].

The Rufous Fantail-Warbler is very common in suitable localities, that is, where there is heavy grass-jungle. On the Cantonment Grass Farm it is particularly abundant, and there I have, on many occasions, found its nest. It breeds, I fancy, twice in the year, once in March or early April and again in the rains. The nest, a most delicate little cup, made of white vegetable fibre, down, and hair, is fastened to three or four stems of grass which fall over and partially hide it, making it by no means easy to discover. The eggs are three, four, or five, white or bluish-white, with red spots and speckles.

The following dates occur, amongst others, in my diary :—

Mar.	30.	Nest and 5 eggs (hard-set).
April	7.	" 4 eggs (fresh).
June	25.	" 4 " "
"	25.	" 5 " "
July	14.	" 4 eggs (deserted).
"	26.	" 3 eggs (fresh).
"	26.	" 1 egg (deserted).

Average measurement of 4 Lucknow eggs '62" × '45"

2 N 2

No. 382. *FRANKLINIA GRACILIS. *Franklin's Wren-Warbler.*

I have only once observed this bird, having met with a pair on May 9, 1901. To Mr. Benjamin Aitken is really due the credit of adding it to our local fauna. We were walking through some babool-jungle, when he called my attention to a loud note coming from one of the trees, and asked me what it was. On my expressing my ignorance, he advised me to shoot the bird, which I did, after some difficulty. About half the tail-feathers were missing, but whether this was due to the shot or to moult, I do not know.

Possibly, though I hardly think so, this bird may be commoner than it appears to be, for these little Wren-Warblers are apt to be overlooked. As they seldom range far, it is possible that this species breeds here, and I shall keep a look out for its nest ; but, up to date, I have never seen or heard of either nest or eggs that *might* belong to it.

No. 384. FRANKLINIA BUCHANANI. *Rufous-fronted Wren-Warbler.*

Phutki [H.]. Titmouse [Anglo-Indian boys].

The Rufous-fronted Wren-Warbler is not uncommon in grass-jungle, especially where there are ravines studded with babool. I have only once found the nest, a globular structure of grass, with a hole in the side near the top ; it contained two eggs, whitish with faint red speckles.

Average measurement of 5 Lucknow eggs $\cdot 60'' \times \cdot 46''$.

No. 402. SYLVIA AFFINIS. *Indian Lesser White-throated Warbler.*

This bird is pretty generally spread over the Division in cold weather. It is particularly partial to the babool and grass-jungle along railway-lines. According to Reid, it is also common in the thorn- and dhak-jungles near Rahimabad. The same authority states that it avoids mango-topes.

No. 407. PHYLLOSCOPUS TRISTIS. *Brown Willow-Warbler.*

This little bird is common during the cold weather in babool-jungle, where it may be seen going about in small

parties hunting for insects. Reid says that it arrives as early as September, and leaves as late as April, but I have only noticed it during the colder months. It is also found in mango-topes.

No. 418. *PHYLLOSCOPUS HUMII*. *Hume's Willow-Warbler*.

Fairly common, though less so, I should fancy, than *P. tristis*. It inhabits much the same localities, and arrives and departs about the same time.

No. 421. *ACANTHOPNEUSTE NITIDUS*. *Green Willow-Warbler*.

Reid says :—"Only, I think, a cold-weather visitant, though I have shot it in September, and as late as the end of April. It frequents mango-topes, and is fairly abundant in the fences along the railway."

My observations agree with the above, and I have nothing further to add.

No. 422. **ACANTHOPNEUSTE VIRIDANUS*. *Greenish Willow-Warbler*.

In the Museum are three specimens (♂ ♂ ♀), identified as belonging to this species, labelled "Lucknow." They were obtained by the native Museum collector.

No. 464. *PRINIA SOCIALIS*. *Ashy Wren-Warbler*.

Phutki [H.]. Tom-tit [Anglo-Indian boys].

This little bird is a common and permanent resident, and is especially fond of dhak- and thorn-jungle. Reid remarks that "it is very destructive in gardens, where it destroys peas with a vengeance, snapping its tail at anyone who attempts to interfere with its apparently favourite pastime." The reference to the tail-snapping brought on poor Reid's head the scorn of A. O. Hume, but, though badly expressed, the former's observation was correct. When disturbed this bird flits about, jerking its tail, and making a snapping noise. This snap is, in my opinion, made by bringing the two mandibles sharply together. Whenever it does this, the bird jerks its tail—hence Reid's error. It makes a nest like that of a Tailor-bird, but with rarely less than

three or four leaves stitched together, and lined with hair, in contradistinction to the true Tailor-bird, which lines the structure with cotton. On one occasion I found a nest of this bird in a clump of patowal, made of woven grass like that of *P. inornata*. I have always taken the eggs in June and July; but I once had one which was hard-set brought to me on March 31st. They are four or five in number, glossy, and of a beautiful brick-red.

Average of 13 Lucknow eggs	.....	·62" × ·45"
Measurement of largest egg	.....	·63" × ·47"
„ smallest egg	.....	·62" × ·42"

No. 465. **PRINIA SYLVATICA*. *Jungle Wren-Warbler*.

So far as I am in a position to judge, this bird is very local. I believe that the late Major Cock found it not uncommonly in the Sitapur district; but I know of only one spot where it is to be found in Lucknow, and that is in the patowal grass on the side of the railway as it runs by the Martinière College park. That the bird cannot be common is, I think, evident, not only from the fact that Reid did not mention it, but because the Martinière boys, than whom none are cleverer egg-finders, did not formerly know it. I have found its nest, a pretty little domed ball of grass, built close to the ground, on three occasions: once in June, 1895, when the eggs were taken by a boy, and twice in the rains of 1901. The first of these two nests contained an egg, which disappeared; the second contained a clutch of five of a dull green colour, with a ring of faint red dots. These I took on July 27th, and the bird was sitting. I had a good view of her as she perched on a piece of wire, but unfortunately failed to secure her.

Average of 5 Lucknow eggs	.....	·68" × ·50"
Measurement of largest egg	.....	·73" × ·50"
„ smallest egg	.....	·62" × ·51"

No. 466. *PRINIA INORNATA*. *Indian Wren-Warbler*.

Ghas Phutki [H.]. Weaver-bird [Anglo-Indian boys].

The Indian Wren-Warbler is extremely common, particularly in the sarpatta or patowal grass used for thatching.

In this it breeds abundantly during the rains, making a lovely little egg-shaped nest, with a hole in the side near the top. The structure is composed of thin strips of the grass, and is unlined. The eggs, four or five in number, are of two types: (a) green, with black, brown, and purple blotches and streaks; (b) pinky white, with similar marks. The latter are very uncommon.

Average of 62 Lucknow eggs (green)	·60" × ·45"
Measurement of largest egg	·62" × ·45"
,, smallest egg	·53" × ·44"
Average of 8 Lucknow eggs (white)	·57" × ·41"
Measurement of largest egg	·59" × ·42"
,, smallest egg	·56" × ·42"

It may be noted that *all* small birds and Warblers are here called "Phutki" indiscriminately.

NO. 469. *LANIUS LAHTORA. Indian Grey Shrike.*

Saféd lahtora [H.]. Big-caste Butcher-bird [Anglo-Indian boys].

The Grey Shrike, though not numerous, is widely distributed, and is particularly partial to babool-topes. It feeds on crickets, locusts, lizards, and the like. It may occasionally seize a sickly or young bird, but I have never actually seen it do so. It breeds from the beginning of March to the beginning of July. I have found a considerable number of the nests, always massive cups of thorns, rags, tow, grass, and feathers, neat and warm internally, but very untidy externally, and often visible for some distance away. Nineteen out of twenty are in babool trees, but once I shot a bird off a nest with four eggs in a sheshum tree about six feet from the ground.

When there are eggs only, the bird is very shy, and it is often difficult to get a good view of it as it flies away. For the above-mentioned specimen I had to wait nearly an hour before I could get a chance of a shot. When there are young it is quite another matter, and the parents are in general very bold. On one occasion, as I was examining her brood, the hen ran up and down the branches close to me just like a squirrel. The greatest number of eggs which I

have ever found was five, but I fancy that four is the proper number, and three hard-set eggs or young are frequent.

The following are a few details taken from my diary :—

Mar. 4.....	...	nest and 4 fresh eggs :	babool.
„ 5.....	„	3 „ „	
„ 26.....	„	3 nearly-fledged young :	babool.
April 14.....	„	5 (3 set ; 2 rotten) eggs :	babool.
May 9.....	„	1 fresh egg :	babool.
„ 14.....	„	3 „ „	
„ 22.....	„	4 „ sheshum.	
June 13.....	„	3 „ babool.	
July 11.....	„	2 half-fledged young :	babool.

Average of 13 Lucknow eggs 1·01'' × ·76''

Measurement of largest egg 1·06'' × ·80''

„ smallest egg ·97'' × ·74''

NO. 473. *LANIUS VITTATUS.* *Bay-backed Shrike.*

Small-caste Butcher-bird [Anglo-Indian boys].

Not very numerous, but a few are met with during the season. At one time two or three pairs used to frequent the “cork” trees near the place now occupied by John’s Ice Factory, but of late years they have disappeared. I have not taken many nests, and in most instances they have been hard to find, as the bird is much more careful in concealing her home than other Shrikes. It is placed in a large fork close to the trunk for preference, and is very neat, made of rags, tow, grass, &c. The eggs are from three to five, of the usual Shrike-like character, and often very handsome.

The following are the details of my discoveries :—

Mar. 21.....	nest ready for eggs :	cork-tree.
„ 27.....	nest and 1 fresh egg :	babool.
April 9.....	„ 3 „ „	
May 5.....	„ 2 young :	babool.
June 5.....	„ 3 fresh eggs :	babool.
„ 9.....	„ 2 young and 2 addled eggs :	babool.
„ 30.....	„ 5 fresh eggs :	babool.
July 1.....	„ 2 „ „	

Average of 10 Lucknow eggs ·79'' × ·60''

Measurement of largest egg ·81'' × ·64''

„ smallest egg ·72'' × ·58''

NO. 476. *LANIUS ERYTHRONOTUS*. *Rufous-backed Shrike*.
Mattiya lahtora [H.].

According to my experience this species is rarer close to Lucknow than either *L. lahtora* or *L. vittatus*, but further out in the District it is much the commonest Shrike. I saw numbers on the telegraph-wires one day in December as I was travelling between Lucknow and Cawnpore. It breeds here, and I have taken what I believe to be its nest and eggs on two or three occasions. They resembled those of *L. lahtora*, but were a trifle smaller. I saw the birds, but in a bad light, when it was impossible to swear to anything. All the nests and eggs were found at one end of a babool-topc, and at the other end I took several nests of *L. lahtora*, shooting the birds. I distinctly saw both the Shrikes in the tope, and though I did not succeed in obtaining a single specimen of *L. erythronotus* at its nest, I am fairly confident of the genuineness of my eggs. I hope, however, to succeed later in getting a clutch with the parent bird.

Average of 9 (presumed <i>erythronotus</i>) Lucknow eggs..	·97" × ·73"
Measurement of largest egg	1·00" × ·75"
„ smallest egg	·95" × ·70"

NO. 479. *LANIUS ISABELLINUS*. *Pale-brown Shrike*.

Reid stated that this Shrike was not common. As he apparently got only one specimen, an adult (? sex), at Ajgaen, which is now in the Lucknow Museum, and as I have never met with it in seven years, I think that it cannot be said to be a frequent visitor to this part of Oudh.

NO. 481. *LANIUS CRISTATUS*. *Brown Shrike*.

This pretty Shrike is not uncommon in the cold weather. I have often seen and shot it in babool-topes on open plains. All the specimens that I have secured have been more or less barred.

NO. 488. *TEPHRODORNIS PONDICERIANUS*. *Common Wood-Shrike*.

Kerula [H., *teste* Reid]. Tanti-tuia [Anglo-Indian boys].

This species is fairly common and is a permanent resident. According to Reid's experience and my own it is always

found in gardens, avenues, or mango-groves, and I have never seen it in low scrub or dhak-jungle. This Shrike was generally noticed by me singly or in pairs, but Reid described it as moving about "in small parties, apparently searching the leaves and branches of trees for insects, caterpillars, &c." It breeds from the middle of March to the end of May—possibly later.

The nest, a felted cup made of rootlets, bits of bark, cloth, string, &c., and coated over with cobwebs, is *very* difficult to find. The bird is extremely suspicious, and cannot easily be made to betray its home. Moreover, if a nest is disturbed during the building process, it is almost certain to be forsaken and destroyed. For several years I tried to get the eggs, but without success. In 1901, however, I took three nests with my own hands:—

March 25. . . .	Bird sitting on nest with 3 fresh eggs.
April 24	" " " 4 slightly set eggs: ♀ shot.
May 25	" " " 3 newly set eggs.

The first nest was in a neem tree, the other two were in mangos. The colour of the eggs is white with a greenish tinge, thickly spotted and mottled with various shades of brown and purple. Those of the first and second nests have the markings pretty evenly distributed all over, but in those of the third the majority go to form dense rings near the larger end.

The note of this bird, though difficult to express in words, is pretty and mellow, and easily recognised. The name given to this species by the Martinière boys represents the sound about as nearly as any word can do.

Average of 10 Lucknow eggs	'70" × '58"
Measurement of largest egg	'75" × '61"
" smallest egg	'66" × '56"

No. 490. *PERICROCOTUS SPECIOSUS*. *Indian Scarlet Minivet*.

Sat suki kapi [H., *teste* Reid].

In the winter of 1894 Mr. John Spence, of La Martinière College, shot a pair of birds, male and female, which he kindly gave to me. I had only just arrived in India and knew nothing

about its ornithology. By the aid of "Jerdon" I made them out as belonging to this species, but unfortunately never preserved them. I have never actually handled a Lucknow specimen since. Though possibly the bird may be overlooked, on account of being mistaken for its smaller cousin, *P. brevirostris*, I think that it is but a rare winter visitor from Kumaun. Reid has written: "Rare it undoubtedly is, but small parties, chiefly females, may be met with occasionally, from November to the end of February, in mango-topes all over the Division, while I have frequently seen it in the Horticultural Gardens at Lucknow. It is strange that, though this species visits us, *P. roseus* does not."

No. 495. PERICROCOTUS BREVIROSTRIS. *Short-billed Minivet.*

Sat suki kapi [H., *teste* Reid]. Large Raja Lal [Anglo-Indian boys].

A fairly common winter visitor, frequenting gardens and mango-groves in large and small parties, the females predominating. The birds generally keep near the tops of the trees, and are constantly on the move, flitting from twig to twig eagerly searching for insects. They first put in an appearance about November, though sometimes as early as October, and depart for the hills in February.

No. 500. PERICROCOTUS PEREGRINUS. *Small Minivet.*

Raja Lal [Anglo-Indian boys].

This pretty little bird is a common and permanent resident. Like other Minivets, it goes about in small parties, except in the breeding-season, searching the trees for insects. The nest is a most lovely little cup of vegetable fibres, lichens, bark, and cobwebs, while it is so small and so like a knot on a branch that it is almost impossible to find it, except by carefully watching the birds. I have taken it on the sheshum, but principally on the mango and babool, at all heights from six to forty feet. A most curious fact in connexion with this bird is that—with, I think, only one or two exceptions at the most—I have always found nests,

whether building or with eggs, in possession of *three* birds, *two* females and one male. What is the exact duty of this second wife I cannot make out. Possibly she may be a drudge. That she exists I have satisfied myself time after time, and so convinced are the Martinière boys of the fact that they—no mean observers, by the way—rarely trouble to look for a nest if only one female is present. Unfortunately I have never yet found out what happens when there are young. Whether both females take part in incubation and in rearing the young, I do not know. I do not think that both lay eggs, as I have never found more than three. I wonder whether the second wife is pressed into service, or whether two are taken on trial and the barren one dispensed with.

The great majority of these birds breed with us in *March and April*; but I have taken nests in May, and once a *single hard-set egg* as late as July 26. This strikes me as curious, seeing that Oates gives the breeding-season as “from June to October.” The eggs are somewhat variable in coloration: I have them white with large brown blotches, and white spotted with rusty red like those of *Parus major*; but the majority, I think, are bluish white, with various markings of brown, purple, and claret. Several of these eggs, as also those of other birds which breed on inaccessible boughs, I have obtained by the following device:—A sheet is held underneath the nest by four men, one at each corner. Another ascends the tree, and, with a long stick, carefully pushes the eggs one by one out of the nest. Unless they fall against some twig on the way the chances are ten to one on their being taken safely from the sheet.

Average of 17 Lucknow eggs	‘66" × ‘51"
Measurement of largest egg	‘68" × ‘55"
„ smallest egg	‘61" × ‘49"

No. 508. *CAMPOPHAGA SYKESI. *Black-headed Cuckoo-Shrike.*

Jungle-Warbler [Anglo-Indian boys].

The Black-headed Cuckoo-Shrike visits Lucknow about May, and leaves at the end of the “rains”; at any rate, I

have never seen nor heard it at other times. It is far from common ; but its rich mellow notes attract attention at once. I have only met with it in two or three localities. It breeds in the Martinière Park, and in some of the baghs, or gardens, towards the city, during the latter part of May, June, and July.

The nest, which is most difficult to discover, I have found twice only. On June 10th, 1898, in a so-called "cork" tree, I found a nest with two eggs. Unfortunately, in climbing up, the latter were shaken out of the shallow pad—I did not know the sheet trick in those days—and all I got were the fragments. A third egg, taken from the same nest two days previously, was given to me. It measures $\cdot 81'' \times \cdot 65''$. Two other eggs in my possession measure $\cdot 77'' \times \cdot 59''$ and $\cdot 80'' \times \cdot 60''$ respectively. In colour they are all of a rich deep green, thickly blotched and streaked longitudinally with greenish brown.

The nest is a very flat shallow pad of twigs, rootlets, bark, lichens, &c., and much resembles that of *Graucalus macii*, only it is a little smaller.

NO. 510. *GRAUCALUS MACII*. *Large Cuckoo-Shrike*.

Khaki Popiya [H., *teste* Reid]. Tree-Plover, Rain-bird [Anglo-Indian boys].

The Large Grey Cuckoo-Shrike is fairly common in Lucknow, and often as many as half a dozen are to be seen together. Its flight is undulating, with a few rather rapid strokes of the wing every now and again. Often, when driving along a road lined with trees, one, or possibly two, of these birds have kept me company for a mile or more, flitting on from tree to tree just ahead of the tum-tum. The nest is a shallow pad of fibres, roots, twigs, cobwebs, &c., very small for the size of the bird, and perhaps one of the most difficult to find, as the owner is exceedingly chary of disclosing its whereabouts. I first found one on a small poplar, but the bird deserted it. This was in March. On June 12th, 1898, I took two fresh eggs from a nest in the fork of a sheshum tree close to the road in the Martinière

Park. This pair were of a beautiful yellowish stone-colour richly marked with lilac and brown spots, the former appearing to be below the surface, as with Skimmers' and Terns' eggs. They measured $1\cdot21'' \times \cdot84''$ and $1\cdot14'' \times \cdot85''$. Of another similar pair I received the fragments only, as they struck a branch instead of falling straight into the sheet. This was about August 5th, 1901, and the nest was also in a sheshum. On July 27th, 1901, I found a bird sitting on a single hard-set egg, in a mango-tree. This egg was of a greenish-white colour spotted with brown and lilac, and measured $1\cdot23'' \times \cdot86''$. I was surprised to find the nest on this particular kind of tree, for long ago Reid wrote as follows:—"A peculiarity of this bird is that it rarely alights on mango-trees, preferring to pass over them on its way from one tree to another; while at other times it may be seen on babool-bushes, evidently oblivious of the comparatively magnificent mango-trees around." I think that Reid was somewhat mistaken in this, for the bird certainly does alight on mangos, though it often seems to prefer other trees, probably because they harbour some favourite insect. The name "Tree-Plover," given to this species by the Martinière boys, is doubtless due to the colour of the eggs, but I have never yet been able to get an explanation of the term "Rain-bird." Though strictly speaking an arboreal bird, I have constantly seen it descend to the ground, and search amongst the dead leaves for a moment or two before returning to the tree.

No. 518. *ORIOLOUS KUNDOO*. *Indian Oriole*.

Pilak [H.].

The Indian Oriole, though a permanent resident, is very scarce during the winter months, when, curiously, its place is to some extent taken by *O. melanocephalus*. It becomes common about May and breeds during June and July. The nests are cup-shaped cradles suspended in outlying forks of trees, usually, but not always, at some height from the ground. The materials are grass, tow, rags, &c., and the structure is generally well concealed from above,

but fairly easily seen from below. I have found it on various kinds of trees, but I think that the mango has the preference.

Average of 15 Lucknow eggs	1·13'' × ·81''
Measurement of largest egg.....	1·14'' × ·84''
" smallest egg	1·11'' × ·78''

The name Mango-bird, usually applied to this species, is bestowed on *Merops viridis* by the Martinière boys.

No. 521. ORIOLES MELANOCEPHALUS. *Indian Black-headed Oriole.*

Pahari-Topi-dar Pilak [H., *teste* Reid].

It is a curious fact that this bird is decidedly most common during the cold weather. When *O. kundoo* is "en évidence," this bird is rarely seen. I think that the great majority go east to breed. On one occasion, however, in June, I saw a pair apparently breeding in a mango-tope near Mohanlalganj, but, though I hunted carefully, I could not find their nest.

NO. 528. PASTOR ROSEUS. *Rose-coloured Starling.*

Golabi Myna [H.]. Mulberry-bird [Anglo-Indian boys].

Rose-coloured Starlings are common during the cold weather, particularly so just before they start off on their bridal tour about April, when they collect in large flocks. They are certainly not permanent residents. In Reid's notes it is stated that "occasional stragglers will be met with throughout the hot and rainy seasons, and it is fairly abundant as early as the commencement of October." If Reid ever really saw the birds in the hot weather and the rains, which I venture to doubt, they must have been sickly or wounded individuals too weak to join in migration.

They are found feeding in company with Mynas and Starlings, and I have often seen numbers in cultivated ground amidst dhak-jungle.

No. 532. STURNUS MENZBIERI. *Common Indian Starling.*
Kusnai, Tilora [H.].

The Common Starling is very abundant in the cold weather, associating with Mynas in large flocks. It is

good eating, and I have often knocked a few over for the pot on my way home.

Reid wrote:—"When migrating in April they often depart in flocks of countless numbers. When on the Volunteer Rifle Range on the 31st April last (1881), a flock passed across the range, covering its entire length of 900 yards and extending far beyond the Butts, presenting a dense and zigzag column fully 40 yards in breadth—a sight to see and hear."

NO. 534. *STURNUS PURPURASCENS. *Gould's Starling*.

Shortly before his death, Reid, knowing that I was revising his "list," wrote to me to say that amongst some skins of *S. menzbieri* sent by him to the British Museum one was identified by Dr. Bowdler Sharpe as belonging to this species.

NO. 538. STURNIA MALABARICA. *Grey-headed Myna*.

Pawai [H., *teste* Reid].

According to Reid, this bird is a permanent resident. It may be so, but I doubt the fact, as I cannot recall an instance of having actually seen it in a wild state.

NO. 544. TEMENUCHUS PAGODARUM. *Black-headed Myna*.

Pawai, Popoya maina, and Kala-sir Maina [H.].

The Pawai, as this bird is commonly called by everyone, native and European alike, is not nearly so numerous here as it is at many other stations. I have seen it chiefly in the avenues in cantonments, at Dilkusha Gardens, and near the Residency. It breeds from May to July, in holes of trees such as mango, pekul, siris, or sheshum. Most of my nests have been empty or have contained young birds, but on one occasion I took four light blue eggs out of a hole in a sheshum not far from the Mahomed Bagh Club. The nest was composed of hay, rags, &c., and was filthily dirty and smelt like a Hoopoe's—only worse, if possible. The usual number of eggs in a clutch appears to be three.

Average of 11 Lucknow eggs	·99" × ·70"
Measurement of largest egg	1·04" × ·72"
„ smallest egg	·94" × ·66"

This species is caught and caged by the natives, being a great favourite as a songster. It is an excellent imitator of other birds' notes.

No. 549. *ACRIDOTHERES TRISTIS*. *Common Myna*.

Maina, Desi-maina, Teluri [H.].

This bird vies with the Sparrow, House-Crow, and Paddy-bird in being the commonest species in Lucknow. It is a great favourite as a pet, and the Martinière boys always have several, which are remarkably tame. It rarely commences nesting until the first fall of rain in June, and continues, according to Reid, until September, but I fancy that few lay after July. The nest is a mass of grass, rags, sticks, feathers, paper, &c., in a hole of a tree for preference, but sometimes in a building. The eggs are, of course, blue, fairly glossy, and usually three or four in number; five are rarely found.

Average of 14 Lucknow eggs 1·18" × ·86"

Measurement of largest egg..... 1·25" × ·91"

„ smallest egg 1·14" × ·82"

No. 551. *ACRIDOTHERES GINGINIANUS*. *Bank-Myna*.

Darya-maina, Daryta-maina [H.]. Well-Myna [Anglo-Indian boys].

The Bank-Myna is almost as common as the previous species, but is not so fond of human habitations. Its habits resemble those of *A. tristis*, but it breeds in colonies in holes of river-banks or wells. The nest is the usual conglomeration of sticks, rags, &c. &c. On one occasion I found parts of a Latin exercise and some arithmetic questions in a nest in the bank of the Goomti. The eggs are blue, and like those of *A. tristis*, but smaller on average. The breeding-season is from April to June, but most eggs are got at the beginning of May or a little earlier.

Average of 10 Lucknow eggs 1·09" × ·76"

Measurement of largest egg..... 1·14" × ·74"

„ smallest egg ·98" × ·78"

No. 555. STURNOPASTOR CONTRA. *Pied Myna.*

Abulka-maina, Ablak-maina [H.]. Abulka [Anglo-Indian boys].

The Pied Myna is a very common and permanent resident. It is not inclined to unite in separate flocks, but joins with the Common and Bank Mynas. Like the former, it is particularly partial to native villages. It breeds from the end of May to the end of July, but most eggs are laid in June shortly after the first fall of rain. The nest is a shapeless bundle of straw, rags, paper, grass, &c., lined with feathers, and having a hole at the side. If a babool—preferentially one in the middle of a native village—is handy, it is selected, but almost any tree will do if that fails. The eggs are usually three or four, sometimes five, light to fairly dark blue in colour, and rather glossy.

Average of 13 Lucknow eggs 1·09" × ·77"

Measurement of largest egg 1·14" × ·80"

„ smallest egg 1·06" × ·75"

No. 561. SIPHIA PARVA. *European Red-breasted Flycatcher.*

This Flycatcher is fairly common during the cold weather, frequenting mango-topes, gardens, and trees along the railway-lines. It is an active little bird, constantly darting from its perch, and returning after a moment or two to the same spot. It departs about March, or, according to Reid, not until April.

No. 562. SIPHIA ALBICILLA. *Eastern Red-breasted Flycatcher.*

I have not shot many of these little Flycatchers. They look so pretty that, in common with many other species, I have spared them, as a rule. It is impossible to distinguish between *S. parva* and *S. albicilla*, unless the bird is in the hand, and probably I have often confounded the two. Reid says that he thinks one is about as common as the other, and I expect that he is not far wrong.

No. 575. *CYORNIS RUBECULOIDES. Blue-throated Flycatcher.*

Reid recorded this bird as "only a cold-weather visitor, numerically rare and seldom seen, except perhaps in the guava-groves and gardens about Lucknow. In the District it is occasionally met with in mango-topes, frequenting low branches, or often small shoots projecting from the trunks of the trees, from which it sallies forth after insects, rarely returning to the same perch, and seldom to the same tree."

I have only seen the bird once, and that was in my garden at La Martinière College.

No. 576. *CYORNIS TICKELLI. Tickell's Blue Flycatcher.*

According to Reid, this species is commoner than the last. I have no note of having seen it, and my impression is that both species are of rare occurrence in Lucknow.

No. 579. *STOPAROLA MELANOPS. Verditer Flycatcher.*

Only a cold-weather visitant, of course, and never, I think, very abundant. Reid gives the better wooded parts of the Division, the Horticultural Gardens, and the Wingfield Park—where, if I remember right, I have seen it on one or two occasions—as the localities it chiefly affects.

No. 588. *ALSEONAX LATIROSTRIS. Brown Flycatcher.*

I have no note of having actually come across this bird. Reid has recorded it as occurring during the "rains," but he had "no record or recollection of having seen it at other seasons."

No. 592. *CULICICAPA CEYLONENSIS. Grey-headed Flycatcher.*

This Flycatcher visits the Division in large numbers during the cold weather. It shews great partiality for mango-topes.

No. 598. *TERPSIPHONE PARADISI. Indian Paradise Flycatcher.*

Shah-Bulbul [H.]. Rock-Bulbul [Anglo-Indian boys].

A permanent resident, generally spread over the wooded portions of the Division, but far from numerically abundant.

It breeds in June and July, as I have seen the eggs. Unfortunately the only nest I actually found myself was destroyed by heavy rain. It was in a mango-tree about ten feet from the ground. Reid, however, got the eggs here, and says :—"On the 6th of June last (1881), I took a nest and four eggs from a low branch of a mango-tree. The eggs, of a delicate white salmon-colour, were minutely spotted with red, and ringed with similar spots at the large end." These four eggs averaged $\cdot 80'' \times \cdot 58''$.

NO. 601. *HYPOTHYMIS AZUREA. Indian Black-naped Fly-catcher.*

I am very ignorant concerning our migratory Flycatchers, as, during their stay here, whenever I have spare time, I am on the jheel shooting rather than in the tope collecting. According to Reid this species is not common. "It does not seem to care for mango-topes, in which I have never seen it ; but in forest-looking tracts, with plenty of under-wood or shrubs, it may occasionally be seen, generally two or three together."

NO. 604. *RHIPIDURA ALBIFRONTATA. White-browed Fan-tail-Flycatcher.*

This pretty little bird with its plaintive note is common all over the Division, chiefly, I think, in mango-groves, but also in avenues and gardens. It is, of course, a permanent resident. It is interesting to watch it darting from a branch after insects, returning to its perch and spreading out its tail. It breeds, I think, twice—in March or early April, and again in the "rains." The nest is a most delicate little inverted cone of fine grass, coated with cobwebs, and is placed *on* the branch of a tree—generally a mango, but sometimes a guava or other species. Reid has given an excellent account of the nest-building, which is worth quoting :—"The place selected was a horizontal and slender mango branch about six feet from the ground, at a point where the branch terminated and three slender uprights started. In this fork they commenced the nest by twisting spiders-webs round the main or horizontal stem upon which

their tiny structure was destined to stand. Next morning the nest was but little bigger than, and almost as neat and compact as, a large acorn-cup, and entirely unconnected with any of the upright twigs. During the next two days good progress was made, and on the fifth day the nest was a perfect full-sized skeleton, having its sides firmly attached to the three perpendicular twigs. The process of thickening the sides of the nest then commenced, and in thirteen days, counting from the beginning, the nest was completed. On the fifteenth day it contained two eggs of a creamy-white colour with a zone of brownish spots at the thick end of each."

I have taken several nests and have always found the full complement of eggs to be three, though once I took four in a clutch. They are very like miniature Shrikes' eggs, white with a faint brownish tinge, and a ring of brown and purplish spots.

Average of 12 Lucknow eggs	·62" × ·49"
Measurement of largest egg	·67" × ·50"
„ smallest egg	·57" × ·47"

NO. 608. PRATINCOLA CAPRATA. *Common Pied Bush-Chat*.
Kala Pidha [H.].

The Pied Bush-Chat is not very numerous, though I believe that it is a permanent resident. I have seen it chiefly in dhak-jungle, and ravine-like ground covered with scrub. I have never found the nest, though I have had its discovery recorded. It is possible, however, that the fabric may have belonged to *Thamnobia cambaiensis*.

NO. 610. PRATINCOLA MAURA. *Indian Bush-Chat*.

A common winter visitor, coming in October and leaving in April. Reid's opinion that it is a very wary bird is not in accordance with my experience; but it is very restless, continually flitting from bush to bush, and is sometimes difficult to shoot on this account.

NO. 613. *PRATINCOLA INSIGNIS. *Hodgson's Bush-Chat*.

I shot a large Bush-Chat near Ataria, about twenty miles north from Lucknow, in the early spring of 1897, but

unfortunately mislaid the skin. The bird was perched on some long grass on rough ground by the jheel side. I *think* that it must have been of this species; but until I can find the skin and properly identify it, I prefer to mark it as doubtful.

I find, on looking through the Catalogue of the Lucknow Museum, that there is a skin labelled "♀ ad., Gonda." The Marshalls record it from Cawnpore in February.

NO. 615. *OREICOLA FERREA. *Dark-grey Bush-Chat.*

The discovery here of this species, which, I believe, has never before been recorded from the plains proper, is somewhat curious.

In the winter of 1897 I shot a bird, with which, at the time, I was unacquainted, and, before I had time to investigate the matter, lost the skin. On describing the bird as well as I could from memory, the conclusion was arrived at that it must be a male of *Sylvia jerdoni*, a bird that was not unlikely to be found, and accordingly I entered it as such in my last "additions." Having occasion to overhaul some old drawers of skins before leaving for England, I found the missing specimen hidden away, and at once recognised it as the Dark-grey Bush-Chat, ♂, a number of examples of which I had collected in the higher hills in 1900. I compared it very carefully with a whole series of *O. ferrea*, and quite satisfied myself this time as to its correct identity. It was shot while feeding on insects in a babool tree.

NO. 625. SAXICOLA ISABELLINA. *Isabelline Chat.*

NO. 626. SAXICOLA DESERTI. *Desert Chat.*

These two Chats, or Wheatcars, are not very numerous, but a few may generally be found sitting on bits of kunker on the "usar" maidans. I have not shot many of them, but should fancy that neither is much commoner than the other. They are only cold-weather visitors, and leave about March.

NO. 629. CERCOMELA FUSCA. *Brown Rock-Chat.*

Shama [H.]. Shama [Anglo-Indian boys].

Reid evidently muddled up the names for this and *Thamnobia cambaiensis*. The Brown Rock-Chat is universally

known as the Shama in Lucknow, where, though not numerous, a few are always to be found amongst old ruins. It breeds from March to July ; but most eggs, I think, are hatched by the end of April. A couple of pairs or so always frequent the main building of the Martinière, making their nests in the dormitories, in spite of the frequency with which they are robbed. I have been unlucky with their eggs ; the only specimens which I have found were in a nest in a ravine near Cawnpore. Once or twice I have found young birds. The few eggs which I have seen have been light blue, sparsely spotted with yellow-brown or brownish red.

Average of 8 Lucknow eggs	·80" × ·61"
Measurement of largest egg	·81" × ·61"
„ smallest egg	·78" × ·60"

No. 644. *RUTICILLA RUFIVENTRIS*. *Indian Redstart*.

Lalgonda [H., *teste* Reid]. Devil-bird [Anglo-Indian boys].

A very common winter visitor, arriving in September or earlier, and staying on into May.

No. 647. *CYANECULA SUECICA*. *Indian Blue-throat*.

Cut-throat [Anglo-Indian boys].

Very common in the cold weather, especially so in the crops lying along the river-banks.

No. 661. *THAMNOBIA CAMBAIENSIS*. *Brown-backed Indian Robin*.

Dama [H., and Anglo-Indian boys].

A very common and permanent resident. It has a pretty song in the breeding-season, and, at this period, as remarked by Reid, it has the habit of "dancing about all the time with its wings in a trailing position and its tail erect."

It breeds from March to July, making a Robin-like nest of grass, moss, hair, &c., in holes in buildings, walls, ravines, or occasionally amongst the leaves of the aloe and cactus. The eggs, three, or occasionally four, in number, are white or greenish white, rather thickly spotted and blotched with reddish brown, chiefly at the larger end. In the nests of

this species I have almost invariably found a bit of snake-skin, and Reid once found one entirely composed of human hair.

Average of 24 Lucknow eggs '77" × '57"

Measurement of largest egg '83" × '61"

„ smallest egg '71" × '54"

No. 663. *COPSYCHUS SAULARIS*. *Magpie-Robin*.

Dhyal [H. and Anglo-Indian boys].

The Dhyal is a common and permanent resident, frequenting gardens and avenues alike, but with, I think, an especial fondness for mango-groves, in which I have often taken its nest. Reid remarked that "its food must be very varied, for I found one feeding on a centipede, about four inches long, that I made it drop with difficulty. On examining the centipede I found that life was not quite extinct."

It breeds in May, June, and July, chiefly in holes of trees, but according to Reid in wells and deserted buildings also. The eggs are usually four, pale bluish green spotted and blotched with brown, much resembling small Blackbird's eggs. On one occasion I took no less than nine from a nest in a hole in a poplar tree. They were in various stages of incubation. Doubtless more than one bird had laid them.

During the breeding-season this bird, like the Brown-backed Robin, sings sweetly; but I do not think that it does so at other times.

Average of 22 Lucknow eggs '88" × '68"

Measurement of largest egg '93" × '67"

„ smallest egg '84" × '69"

No. 686. *GEOCICHLA CITRINA*. *Orange-headed Ground-Thrush*.

Only a cold-weather visitant and far from common. Reid stated that "it may, to a certainty, be found in every forest-looking bamboo-brake, frequenting damp and dark nooks, where it feeds on the slugs and insects usually found there, turning over the leaves to find them. It not unfrequently enters the Horticultural Gardens at Lucknow, where it finds suitable haunts in the damp shrubberies;

but in dry dhak-jungles, no matter how shady the trees may be, I have never seen it. It also avoids mango-topes."

No. 691. PETROPHILA CINCLORHYNCHA. *Blue-headed Rock-Thrush*.

A rare cold-weather visitor. Reid came across it on two or three occasions near Byramghat, and twice in mango-groves near Lucknow.

No. 698. OREOCINCLA DAUMA. *Small-billed Mountain-Thrush*.

A cold-weather visitor, frequenting the same localities as *Geocichla citrina*, and about as uncommon.

No. 720. PLOCEUS BAYA. *Baya or Baya Weaver-bird*.

The Baya is a common and permanent resident, though rather local in its distribution. It prefers those parts where there is a certain amount of water. It breeds in colonies, making a retort-shaped nest which is suspended from the twigs of the babool or from the leaves of the toddy-palm, and if there is any water at hand the nests are sure to overhang it. Sometimes the old structures are repaired, and I had one given me by Mr. P. J. Lucas which had seven chambers, one below the other, only the last, that of the year, being in use. The number of eggs, which are laid between June and September, is usually two, but occasionally three or four. They are pure white. The Baya makes an interesting pet, as it is easily tamed and taught to perform tricks.

Average of 18 Lucknow eggs ·80" × ·57"

Measurement of largest egg ·86" × ·60"

„ smallest egg ·75" × ·55"

No. 723. PLOCEUS MANYAR. *Striated Weaver-bird*.

Telia-baya [H.].

Reid wrote:—"Though Jerdon states that the Striated Weaver-bird does not appear in the North-west Provinces ('Birds of India,' vol. iv. p. 349), he must, I think, have been misinformed, as it certainly is not uncommon during the rains here and in suitable localities throughout both Oudh and the N.W. Provinces. In July 1878, when the Goomti was in high flood, some hundreds of these birds

commenced building their nests in a large jungle of sarpatta grass, which was then surrounded by, and standing in, water, the overflow of the river. Soon afterwards the river fell, leaving the jungle high and dry, and nesting operations immediately ceased. In only two nests did I afterwards find eggs—three in each; the average measurement of the six being $\cdot 81'' \times \cdot 59''$ —the largest measuring $\cdot 84'' \times \cdot 61''$ and the smallest $\cdot 78'' \times \cdot 56''$."

Coming down the Oudh and Rahilkund Railway, near Bareilly on the Lucknow side, I once saw a number of nests, presumably of this species, in the long patowal or sarpatta grass.

No. 726. *MUNIA ATRICAPILLA*. *Chestnut-bellied Munia*.
Nakal-nor [H.].

Not common, though Reid recorded it as being a permanent resident. The bird-catchers always have a good number of examples, though whether they are all caught in Lucknow I rather doubt. Like other Munias, it is chiefly to be seen in the long sarpatta grass, feeding on the seeds.

No. 734. *UROLONCHA MALABARICA*. *White-throated Munia*.
Chiruka [H. and Anglo-Indian boys].

The Chiruka is very common and a permanent resident, being found everywhere. It makes a rather untidy globular nest of grass and a few feathers, having a hole at the side. The eggs are white, five to seven in number; but, where two hens, or more, join forces (as not infrequently happens), quite a collection may be found. The nests are usually in thorny bushes or quick-set hedges, but on two or three occasions I have found them underneath those of *Aquila vindhiana*. On one occasion the Eagle was sitting on two eggs, and not three inches below her was a Chiruka on three.

Average of 23 Lucknow eggs	.....	$\cdot 59'' \times \cdot 46''$
Measurement of largest egg	.....	$\cdot 63'' \times \cdot 48''$
„ smallest egg	.....	$\cdot 57'' \times \cdot 44''$

No. 735. *UROLONCHA PUNCTULATA*. *Spotted Munia*.
Seena-baz, Sing-baz [H.].

Not nearly so common as *U. malabarica*, but still fairly

numerous. It is a permanent resident and breeds here, as I once found its nest in a thorn-bush. It was like that of *U. malabarica*. Unfortunately it had no eggs, and I forgot to go later, and so never secured a clutch.

No. 737. *STICTOSPIZA FORMOSA. Green Munia.*

Harri-munia [H.].

The Green Munia is not common, but a few are generally to be found amongst other birds in the chirri-mars' cages. It is said to have less partiality for grass-jungles than the other species of Munia, and to be often seen in mango-topes and high trees. It may be a permanent resident, but of this I am not sure.

No. 738. *SPORÆGINTHUS AMANDAVA. Indian Red Munia.*

Lal Munia [H.]. Lal [Anglo-Indian boys].

A common and permanent resident, frequenting the long patowal grass of the railway-lines in considerable numbers. It is captured—as, indeed, are all Munias—by trap cages. The males are sold for fighting—a pastime in which the Mahomedans take great delight. Though it breeds in the District, I have never found the nest.

No. 761. *CARPODACUS ERYTHRINUS. Common Rose-Finch.*

Tuti [H.].

The Common Rose-Finch is fairly plentiful during the cold weather. It is caught by the natives in considerable numbers. Reid seems to have shot it as early as the beginning of September, but I have seen it only in the winter months.

No. 775. *GYMNORHIS FLAVICOLLIS. Yellow-throated Sparrow.*

Tuti [H.]. Tootie [Anglo-Indian boys].

This bird is both common and a permanent resident, frequenting baghs, mango-topes, and avenues, often in parties. Reid stated that he had often seen it feeding on the ground in flocks during the cold weather. It breeds in Lucknow in holes of trees in March, April, and May. The nest is a conglomeration of rags, wool, feathers, and similar materials.

The eggs, usually three in number, are brownish or greenish white, but so densely marked with dark brown as to be in many instances almost black.

Average of 6 Lucknow eggs	·73" × ·55"	.
Measurement of largest egg	·77" × ·55"	
„ smallest egg	·70" × ·54"	

No. 776. *PASSER DOMESTICUS. House-Sparrow.*

Gonriya [H.].

As common and as great a nuisance as he is in any other part of the world blessed with his presence. A pair made a nest on a bracket in my drawing-room. When it contained two eggs my bearer removed it bodily and brought it to me. Some hours afterwards, noticing that the eggs were well marked, I put the structure back again. The Sparrows returned and laid three more eggs. I felt I ought to have let them be hatched, but five young birds in a drawing-room was too much of a good thing, so I confiscated the eggs and banished the pair. These five eggs formed an exceedingly pretty clutch and averaged ·80" × ·59".

No. 795. *EMBERIZA BUCHANANI. Grey-necked Bunting.*

The Grey-necked Bunting is a common cold-weather visitant, occurring in large flocks. Reid remarked: "Though it resembles the Ortolan of Europe, and was for a long time considered identical, it rarely, if ever, finds its way to the table, in Lucknow at any rate, where thousands of Social and other Larks, if not Sparrows, are annually passed off as genuine Ortolans!"

No. 800. *EMBERIZA LUTEOLA. Red-headed Bunting.*

Gaudam [H.].

A common cold-weather visitant. It avoids well-wooded tracts, and, according to Reid, is especially fond of dhak-jungle bordering on cultivation. It also affects thatching-grass when it is seeding.

No. 803. *MELOPHUS MELANICTERUS. Crested Bunting.*

Kulchira [H. Lucknow, *teste* Reid].

The Crested Bunting is not, according to my experience,

common. Indeed, I think that I have only once or twice seen it, in the long patowal or sarpatta grass on the banks of the Goomti. Reid stated that it was fairly common in the cold weather in November and December, and again in March and April. The native bird-catchers usually have one or two pairs in their cages, probably caught in the district.

No. 809. *COTILE SINENSIS. Indian Sand-Martin.*

Chota Ababil [H.].

Very common and a permanent resident. Breeds in colonies in holes, which it excavates for itself, in the river-banks, less commonly in nullahs and cuttings. The nests, which are usually very dirty, are made of grass and feathers. The eggs, three to five in number, are laid from December to May, possibly also in other months. They are, of course, pure white.

Average of 22 Lucknow eggs	.....	·66" × ·46"
Measurement of largest egg	.....	·73" × ·45"
„ smallest egg	.....	·64" × ·45"

No. 813. *HIRUNDO RUSTICA* (Linn.). *Swallow.*

Ababil* [H.].

A common cold-weather visitor, appearing in October and departing in May. Reid remarked that it seemed, as a rule, to prefer open country away from towns, and was especially partial to jheels.

No. 818. *HIRUNDO SMITHI. Wire-tailed Swallow.*

A permanent resident. It is very partial to water, as are other Swallows, doubtless on account of the insect-life. It breeds with us in March and April, and *possibly* again in the rains. The nest is a shallow cup of mud lined with feathers, usually placed under a bridge or culvert. The eggs are three in number, white with red spots. Last year I found the birds breeding in the verandah of a bungalow at the Solon Brewery, near Simla (5000 feet), as late as the end of September. This, I believe, was the third clutch. It was hatched out successfully, and I used to spend many spare

* A name commonly applied to all Swallows, Martins, and Swifts.

minutes behind the door watching the old birds feeding their young.

Average of 7 Lucknow and Fatehgarh eggs ..	·73" × ·52"
Measurement of largest egg	·78" × ·52"
„ smallest egg	·69" × ·52"

In 'The Ibis' for January 1902, p. 19, Messrs. Rothschild and Wollaston, in their paper on "Birds from Shendi, Sudan," speak of the eggs of this bird as *pure white*; but this is, I fancy, a very uncommon variety.

NO. 823. *HIRUNDO ERYTHROPYGIA. Sykes's Striated Swallow.*

This Striated or Red-rumped Swallow is common during the cold weather, though rather locally distributed. I have also seen the bird in May, and again during the rains. Whether it ever breeds with us or not, I am uncertain. The majority assuredly do not. The only place where I have seen the nests—retort-shaped structures of mud—was in an old fort near Delhi.

NO. 826. *MOTACILLA ALBA. White Wagtail.*

NO. 829. *MOTACILLA PERSONATA. Masked Wagtail.*

These two birds, known to the natives as "Dhobin"—*i. e.*, Dhobie's (washerman's) wife,—are common during the cold weather, coming in September and departing in April. The second is, perhaps, the more numerous of the two. They may be found almost anywhere—about rivers and jheels, in gardens and topes, on lawns and ploughed fields.

NO. 831. *MOTACILLA MADERASPATENSIS. Large Pied Wagtail.*

Khanjan, Dhobin [H.].

This bird is a permanent resident and is common wherever there is any water. It occurs in pairs or singly, never in flocks, as is often the case with other Wagtails.

It breeds from March to May, but most eggs are hatched by the middle of April. The nest is a bulky structure of grass, tow, rags, feathers, and hair, placed in some nook or hole under a bridge, in a native boat, or any convenient spot near water. The eggs are three or four in number, greyish

white in colour, spotted and blotched with various shades of brown.

Average of 8 Lucknow eggs '87" × '63"

Measurement of largest egg '73" × '65"

„ smallest egg '82" × '61"

No. 832. *MOTACILLA MELANOPE*. *Grey Wagtail*.

The Grey Wagtail is fairly common during the cold weather on the banks of rivers and jheels, though not so numerous as some of the other species of Wagtails.

No. 833. **MOTACILLA BOREALIS*. *Grey-headed Wagtail*.

Common, particularly on jheels and rushy streams. This Wagtail and its allies are a terrible nuisance to Snipe-shooters. They keep on rising along with the Snipe, and constantly put the sportsman off.

No. 835. **MOTACILLA BEEMA*. *Indian Blue-headed Wagtail*.

Occurs in company with *M. borealis*, and is fairly common. I have no special notes on it. Of course both birds are merely cold-weather visitors.

No. 836. *MOTACILLA FELDEGGI*. *Black-headed Wagtail*.

Pilkya [H.].

Common during the cold weather. This species arrives early and departs late, many individuals assuming their full breeding-plumage before departure. Like the last two species, this Wagtail is very partial to jheels, rice-fields, and all well-irrigated ground. Reid has remarked that "after a good shower they may be seen in great numbers on usar plains. . . . They sometimes perch on trees."

No. 837. *MOTACILLA CITREOLA*. *Yellow-headed Wagtail*.

Frequents the same localities as the three last-named species, but is perhaps hardly so numerous. It is only a winter visitor.

No. 838. **MOTACILLA CITREOLOIDES*. *Hodgson's Yellow-headed Wagtail*.

I have once only come across this bird, but there is also an adult skin (sex ?) in the Lucknow Museum, apparently procured by Reid. It is, of course, only a winter visitor,

and, I should think, very uncommon. My bird (♂) was shot on the banks of the Goomti, Jan. 1, 1898.

No. 840. *ANTHUS TRIVIALIS. Tree-Pipit.*

Common during the cold weather. Frequents the same localities as the next species, from which it is difficult to distinguish it, unless the bird is in the hand.

No. 841. *ANTHUS MACULATUS. Indian Tree-Pipit.*

Very common during the cold weather, some individuals remaining until the end of May. They occur in parties, not only in the fields, but also in mango-topes, where they are very abundant, flying up into trees when anyone approaches. They feed chiefly on the ground, but also on trees.

No. 844. *ANTHUS SIMILIS. Brown Rock-Pipit.*

A cold-weather visitor, not uncommonly met with on ploughed land or on waste ground round jheels and in similar localities.

No. 847. *ANTHUS RUFULUS. Indian Pipit.*

A common and permanent resident, being found indiscriminately in cultivated tracts, open plains, paddy-fields, and dhak-jungle. I have found the nest twice: once in February, with four young, and again on the 31st of March, with four fresh eggs. Both nests were in the stumps of patowal grass, which had been cut down by thatchers. They were neatly-made structures of grass, lined with hair, but fell to pieces on being lifted up. The eggs were greyish white, spotted with brown.

Average of 4 Lucknow eggs 78" × 57"

Measurement of largest egg 79" × 57"

„ smallest egg 77" × 57"

No. 859. **MELANOCORYPHA BIMACULATA. Eastern Calandra Lark.*

The only specimen that I know of as being recorded from Lucknow is one that J. Green, one of the Martinière College boys, purchased from a bird-catcher. The man stated that it had been captured on one of the open maidáns or plains close to the city. The bird became very tame and used to

sing extremely well, but eventually was killed and eaten by a snake, which got into its cage during the night.

No. 861. *ALAUDA GULGULA. Indian Sky-Lark.*

Chundul [H.].

A fairly common and permanent resident, frequenting open plains, scrub-jungle, and grassy patches. Strangely, neither I nor anyone else that I know have come across the nest of this bird.

No. 863. *CALANDRELLA DUKHUNENSIS. Rufous Short-toed Lark.*

Baghaira [H.].

A very common cold-weather visitor. It collects in large flocks on the open plains and in scrub-jungle, and also in grassy meadows or along the edges of jheels. As Reid remarked in his account of the Lucknow birds, this species "is looked upon as common property by almost all the Hawk tribe." This bird is the "Ortolan" of the Anglo-Indian. In all probability *C. brachydactyla* occurs in company with *C. dukhunensis*, but I have not, so far, come across a typical specimen.

No. 869. **MIRAFRA CANTILLANS. Singing Bush-Lark.*

Possibly this species has been overlooked, but I do not think that it is often found here. It is very local in its distribution, and the only Lucknow specimen I know of is an adult skin (? sex) in the Museum.

No. 871. *MIRAFRA ERYTHROPTERA. Red-winged Bush-Lark.*

Aggia [H.]. Hooded Lark [Anglo-Indian boys].

A common and permanent resident, found in scrub and grassy wastes, dhak-jungle, and similar localities. It breeds from March to July, making a loose nest of grass, partly domed—whence the Martinière name "hooded"—under a tuft of grass. I have *never* found more than two eggs—on one occasion one which was hard-set—but have had three brought to me, and am told that occasionally four are found. Two is, however, I think, the usual clutch with us. The eggs are

white, densely speckled with various shades of brown and yellow.

Average of 6 Lucknow eggs	·76" × ·55"
Measurement of largest egg	·83" × ·54"
„ smallest egg	·70" × ·55"

No. 874. *GALERITA CRISTATA*. *Crested Lark*.

Chundul [H.].

A common and permanent resident. It is extremely popular as a cage-bird, and is consequently much sought after by the chirri-mars. It keeps, as a rule, to dry ground, avoiding damp meadows, but is common all along the river-banks and on sandy islands wherever the tamarisk (jhao) grows. I have twice found its nest, on March 28th and 30th, each time containing three eggs. These were whitish, spotted and speckled with various shades of brown and lilac, in one case densely, in the other faintly. The nest was a small deep cup, so loosely put together, however, that it would not bear removal.

Average of 6 Lucknow eggs	·82" × ·64"
Measurement of largest egg	·83" × ·64"
„ smallest egg	·81" × ·64"

No. 879. *PYRRHULAUDA GRISEA*. *Ashy-crowned Finch-Lark*.

Duri [H., *teste* Reid]. Skylark [Anglo-Indian boys].

Very common and a permanent resident. Frequents usar plains, ploughed fields, and waste grounds generally. It breeds from January to May, and probably later. The nest is a little cup of grass, placed on the ground under a stone or bush. Eggs two in number, whitish, speckled with various shades of brown and grey.

Average of 6 Lucknow eggs	·72" × ·53"
Measurement of largest egg	·74" × ·58"
„ smallest egg	·65" × ·50"

No. 895. *ARACHNECHTHRA ASIATICA*. *Purple Sun-bird*.

Shakar-khora [H.]. Honey-sucker, Honeysuckle [Anglo-Indian boys].

The Purple Sun-bird is very common and a permanent

resident, frequenting gardens and jungle where there are flowers, but eschewing, as a rule, more barren ground ; it is not, I think, very fond of mango-groves, though occasionally I have found it nesting in those trees. It breeds from February to June ; according to my experience, chiefly during the earlier part of that period. The nest is a pretty little egg-shaped ball, with a hole in the side near the top, over which there is an awning or portico. It is formed of grass, cob-webs, hair, &c., and is always ornamented with the excreta of caterpillars. As a rule, it is suspended from a low twig two or three feet from the ground, but occasionally it is placed much higher. The usual number of eggs is two, but three are often found. They are greenish or brownish white in colour, thickly spotted and marked with various shades of brown and grey.

Average of 15 Lucknow eggs '63'' × '44''

Measurement of largest egg '67'' × '45''

„ smallest egg '58'' × '42''

No. 919. **DICÆUM ERYTHORHYNCHUM*. *Tickell's Flower-pecker*.

White Honey-sucker [Anglo-Indian boys].

This little bird was overlooked by Reid, and I only discovered it by means of the Martinière boys. Ever since I had commenced collecting in Lucknow, I had been told of the "White Honey-sucker," which made a nest like the Purple Sun-bird and laid *white* eggs. For a long time I was incredulous, but on March 13, 1900, two boys, J. Green and L. Jackson, shewed me a nest with one egg. It was a tiny grass ball, with a hole in the side, suspended beneath some mango-leaves. I waited for some time, but did not see the bird. Being convinced, however, that it could belong to no other species, I took the nest, as it was almost certain to be found by some other sharp-eyed youngster. On March 10, 1901, Green shewed me another nest ready for eggs. Unfortunately the two birds, which were watching us, deserted it, and all that I got was the empty fabric. This was situated in a *bêl*-tree, about five feet from the ground, and, like the other, was most cleverly concealed. In fact the

only way to find the nest of this species is by watching the parents, no easy matter. Major Cock apparently found this bird breeding at Sitapur, 60 miles north of Lucknow.

This single egg which I have taken is pure white, glossless, and measures $\cdot 55'' \times \cdot 41''$.

NO. 921. *PIPRISOMA SQUALIDUM*. *Thick-billed Flower-pecker*.

Bull-Tit [Martinière boys].

A common and permanent resident. It is to be seen wherever there are trees, singly or in small parties, hunting for food amongst the leaves. The nest is a most lovely little purse, suspended from a horizontal twig. It is a felted mass of fibres, cotton-down, &c., and is so covered with red scales of vegetable matter that it has a pink appearance. The whole fabric is so beautifully woven that it can be crumpled up in the hand without injury. The entrance is at the side, or rather the end. I have found it on many trees—sheshum, cotton, mango, neem, babool, &c., but the first-named is, I think, the favourite. The eggs, two or three, white or pinky white, spotted and blotched with red and claret, are laid from February to May, the majority being obtained during the month of March.

Average of 7 Lucknow eggs	$\cdot 62'' \times \cdot 44''$
Measurement of largest egg	$\cdot 64'' \times \cdot 45''$
„ smallest egg	$\cdot 60'' \times \cdot 43''$

[To be continued.]

XXXIV.—*On a New Kingfisher of the Genus Corythornis*.

By T. SALVADORI, F.M.Z.S.

(Plate XIII.)

THE Alcedinine genus *Corythornis* is restricted to the Ethiopian Region, and has representatives in every part of it. While *Corythornis cristata* is confined to Madagascar and the Comoro Islands, it appears that *C. cyanostigma* extends over the whole of the region from the Cape to Senegambia on the west, and to Abyssinia on the east, and also reaches

across Tropical Africa from Senegambia to Abyssinia. Besides these, there is a third species, *C. galerita*, which appears to be confined to Western Africa, from Gaboon to Angola, but is also found, according to several ornithologists, in the islands of the Bight of Benin.

I have never had the opportunity of examining specimens of the *Corythornis* of Prince's Island, which by Dohrn (P. Z. S. 1866, p. 325), and more recently by Dr. Sharpe (Cat. B. xvii. pp. 166, 167), has been attributed to *C. galerita* (= *C. cæruleocephala*); but quite recently I have been able to examine five examples (two fully adult and three young) of a *Corythornis* from the Island of S. Thomé, collected by Signor Leonardo Fea. I was at once struck by the peculiarities shewn by these specimens—especially by the young birds, which were such that I could not possibly identify them with *C. galerita*. My task in the identification, however, was not easy, as the Turin Museum has no specimens of the last-named species to compare with those from S. Thomé.

As already stated, the young birds from S. Thomé are very peculiar, having the malar region, the sides of the head, and breast both on the middle and along the sides, brownish black; such features are not mentioned as occurring in the young of *C. galerita* or of any of the allied species. To clear up my doubts about the status of the S. Thomé bird, I decided to send three of the specimens (one adult and two young) from that island to Dr. Bowdler Sharpe, who, being the author of several monographic works on this family, and having in the British Museum very rich material to make the necessary comparisons, was, no doubt, the ornithologist most capable of deciding questions relating to the Kingfishers. Dr. Sharpe, after having examined my specimens, assures me that they are different from those of Prince's Island and of the western coast of Africa in the British Museum, adding that the young birds are the most curious that he has ever seen. He has pointed out to me that, while in adult specimens of *C. galerita* from Prince's Island the light bars across the pileum are blue, and only on the back part of the crest of a malachite-green, in the

S. Thomé bird the crown has malachite-green bars down to the forehead. But the most remarkable characters appear in the young birds—a fact of considerable importance. It is well known that the young of allied species are usually alike, and that the adults become different, shewing the specific characters. But, on the contrary, in the S. Thomé bird the adult examples are very similar to those of the allied species, and greater differences are shown in the young. I am not acquainted with a similar state of affairs in any other bird.

It appears that specimens of the genus *Corythornis* from S. Thomé, besides those collected by Signor Fea, are only to be found in the Museum of Hamburg, collected by Weiss, as mentioned by Hartlaub, and in the Museum of Lisbon, which has examples procured by several collectors, especially by Mr. F. Newton (as mentioned by Prof. Barboza du Bocage and De Sousa); but all these ornithologists have wrongly identified the S. Thomé bird with *C. galerita*. Prof. Bocage also mentions a young female, but makes no allusion whatever to the very peculiar juvenile characters!

To these remarks I add a Latin description of the new species and the references which appear to belong to it.

CORYTHORNIS THOMENSIS, sp. nov. (Plate XIII.)

C. galeritæ similis, sed gastræo castaneo, loris nigris, regione malari castanea paullum nigro tincta, tæniisque transversis pilei cæruleo-viridibus, seu malachitaceis, diversa. Long. tot. mm. 145–147, al. 59, caud. 28, rostri culm. 32. *Av. jr.* Regione malari, loris, capitis lateribus, pectore medio ejusque lateribus fusco-nigris; dorso maculis cæruleo-malachitaceis notato; rostro nigro.

Alcedo cæruleocephala Hartl. (nec Gm.) Beitr. Orn. Westafr. in Wiebel's Verz. pp. 1, 18 (S. Thomé, *Weiss*) (1850); id. Contr. Orn. 1850, p. 131 (S. Thomé); id. Abh. naturw. Ver. Hamb. ii. 2, pp. 1, 18 (S. Thomé, *Weiss*) (1852); id. Orn. Westafr. p. 36 (S. Thomé, *Weiss*) (1857); Sousa, Jorn. Sc. Lisb. n. xlvii. p. 151 (S. Thomé) (1888).

Corythornis cæruleocephala, Boc. (nec Gm.) Jorn. Sc. Lisb. i. p. 134 (S. Thomé, *Dr. Nunes*) (1857); Sharpe, Mon. Alced. p. 39 (part.) (1869); Boc. Jorn. Sc. Lisb. n. xxvi.

p. 86 (S. Thomé, *Custodia de Borja*) (1879), n. xlv. p. 251 (nota) (S. Thomé, *Newton*) (1887); Lopes Vieira, Instituto, no. 11, p. 2 (S. Thomé, *Moller*) (1887); Sousa, op. cit. pp. 152, 153, 156 (S. Thomé, *Nunes and Gomes Roberto*) (1888); Boc. op. cit. n. xlvii. p. 149 (Rio de Manuel Jorge, *F. Newton*) (1888), xlviii. pp. 211 (jeune femelle, Pôtô, *F. Newton*), 233 (S. Thomé) (1888); (2) n. i. p. 36 (part.) (1889); n. ii. p. 144 (St. Miguel, *F. Newton*) (1889); n. iii. p. 209 (Rio do Ouro, *F. Newton*) (1889); n. vi. p. 78 (St. Miguel, Ilot das Rollas, *F. Newton*) (1891).

Corythornis cristata Boc. (nec L.) Journ. Sc. Lisb. i. p. 134 (S. Thomé, *Gomes Roberto*) (1867); Sousa, ibid. no. xlvii. p. 153 (1888).

Corythornis galerita Sharpe, Mon. Alced., Introd. p. viii (part.) (1871); id. Cat. B. xvii. p. 166 (part.) (1892).

Local name, "Cunobia" (*F. Newton*).

XXXV.—More Ornithological Notes from the Transvaal *.

By ALWIN C. HAAGNER.

I OFFER to the readers of 'The Ibis' two rough lists—one of birds observed by Mr. Alexander Ross, F.Z.S., in Johannesburg and the neighbourhood, and the other of those noticed by myself at Modderfontein and on the neighbouring farms. Modderfontein is in the Pretoria district, not quite ten miles from Johannesburg. The two lists are interesting when compared one with the other. Why should a certain species be common in Johannesburg and tolerably scarce at Modderfontein, as, for instance, *Nectarinia famosa*? Perhaps the slight difference in vegetation, such as the presence of mimosa-trees and rank weeds, may account for the fact.

Many birds of Modderfontein I have not been able to determine on account of the want of works of reference. Several of the specimens are in the hands of Dr. Gunning, of the Pretoria Museum, among them being a Gull shot on

one of the Modderfontein dams. I hope, therefore, to be able to give a supplementary list later. The names are taken from Sharpe and Layard's 'Birds of South Africa.'

*I. List of Birds observed by Mr. A. Ross, F.Z.S., in
Johannesburg and the Neighbourhood.*

1. GYPS KOLBI (Sharpe & Layard's B. S. Afr. p. 1).
Common.

2. SERPENTARIUS SECRETARIUS (op. cit. p. 8).
Rare.

3. ASTUR TACHIRO (op. cit. p. 20).
Rare.

4. MILVUS KORSCHUN (op. cit. p. 50).
One specimen seen.

5. CERCHNEIS RUPICOLA (op. cit. p. 62).
Fairly common.

6. CERCHNEIS RUPICOLOIDES (op. cit. p. 63).
Fairly common.

7. BUBO MACULOSUS (op. cit. p. 73).
Fairly common.

8. STRIX FLAMMEA (op. cit. p. 82).
Scarce.

9. CAPRIMULGUS EUROPÆUS (op. cit. p. 83).
Scarce.

10. CYPSELUS APUS (op. cit. p. 90).
Fairly common.

11. CYPSELUS CAFFER (op. cit. p. 92).
Common.

12. MEROPS APIASTER (op. cit. p. 96).
Fairly common.

13. CORACIAS CAUDATA (op. cit. p. 104).
Rare.

14. CORYTHORNIS CYANOSTIGMA (op. cit. p. 108).
Scarce.

15. *UPUPA AFRICANA* (op. cit. p. 134).
Scarce.
16. *CHRYSOCOCCYX CUPREUS* (op. cit. p. 153).
Scarce.
17. *COCCYSTES JACOBINUS* (op. cit. p. 158).
Two specimens seen.
18. *POGONORHYNCHUS LEUCOMELAS* (op. cit. p. 173).
Rare.
19. *GEOCOLAPTES OLIVACEUS* (op. cit. p. 187).
Scarce.
20. *DENDROPICUS CARDINALIS* (op. cit. p. 190).
Very rare.
21. *PYCNONOTUS LAYARDI* (op. cit. p. 815).
Scarce.
22. *COSSYPHA CAFFRA* (op. cit. p. 224).
Common.
23. *MYRMECOCICHLA FORMICIVORA* (op. cit. p. 231).
Common.
24. *THAMNOBIA CINNAMOMEIVENTRIS* (op. cit. p. 232).
Rare.
25. *SAXICOLA FAMILIARIS* Steph.
Saxicola galtoni (op. cit. p. 234).
Common.
26. *SAXICOLA PILEATA* (op. cit. p. 238).
Common.
27. *SAXICOLA MONTICOLA* (op. cit. p. 246).
Common.
28. *PRATINCOLA TORQUATA* (op. cit. p. 250).
Common.
29. *NECTARINIA FAMOSA* (op. cit. p. 306).
Common.
30. *CINNYRIS AFER* (op. cit. p. 313).
Scarce.

31. CINNYRIS AMETHYSTINUS (op. cit. p. 315).
Scarce.

32. ZOSTEROPS VIRENS (op. cit. p. 325).
Scarce.

33. PARUS AFER (op. cit. p. 329).
Common.

34. COTYLE PALUDICOLA (op. cit. p. 361).
Common.

35. HIRUNDO ALBIGULARIS (op. cit. p. 364).
Scarce.

36. HIRUNDO SEMIRUFA (op. cit. p. 370).
Scarce.

37. HIRUNDO CUCULLATA (op. cit. p. 370).
Scarce.

38. LANIUS COLLARIS (op. cit. p. 374).
Common.

39. LANIARIUS GUTTURALIS (op. cit. p. 385).
Common.

40. BRADYORNIS SILENS (op. cit. p. 404).
Common.

41. CORVUS SCAPULATUS (op. cit. p. 416).

42. LAMPROCOLIUS NITENS (op. cit. p. 427).
Two specimens shot at Johannesburg.

43. SPREO BICOLOR (op. cit. p. 429).
Common.

44. AMYDRUS MORIO (op. cit. p. 431).
Scarce.

45. HYPHANTORNIS VELATUS (op. cit. p. 439).
Scarce.

46. VIDUA PRINCIPALIS (op. cit. p. 453).
Scarce.

47. VIDUA ARDENS (op. cit. p. 455).
Rare.

48. *CHERA PROGNE* (op. cit. p. 458).
Common.
49. *PYROMELANA ORYX* (op. cit. p. 462).
Scarce.
50. *PYROMELANA CAPENSIS* (op. cit. p. 463).
Scarce.
51. *PYROMELANA TAHA* (op. cit. p. 465).
Scarce.
52. *ESTRElda ASTRILD* (op. cit. p. 470).
Common.
53. *URÆGINTHUS CYANOGASTER* (op. cit. p. 473).
Once shot near the town.
54. *PASSER ARCUATUS* (op. cit. p. 478).
Common.
55. *POLIOSPIZA TRISTRIATA* (op. cit. p. 482).
Rare.
56. *SERINUS CANICOLLIS* (op. cit. p. 488).
57. *TEPHROCORYS CINEREA* (op. cit. p. 511).
Common.
58. *MACRONYX CAPENSIS* (op. cit. p. 530).
Common.
59. *MOTACILLA CAPENSIS* (op. cit. p. 547).
Common.
60. *COLUMBA PHÆONOTA* (op. cit. p. 559).
Common.
61. *TURTUR CAPICOLA* (op. cit. p. 567).
Common.
62. *TURTUR SENEGALENSIS* (op. cit. p. 568).
Common.
63. *ÆNA CAPENSIS* (op. cit. p. 572).
Common.
64. *PTEROCLES GUTTURALIS* (op. cit. p. 577).
Scarce.

65. *FULICA CRISTATA* (op. cit. p. 621).
Common.
66. *ANTHROPOIDES PARADISEA* (op. cit. p. 628).
Scarce.
67. *OTIS KORI* (op. cit. p. 632).
Rare.
68. *OTIS CÆRULESCENS* (op. cit. p. 638).
Rare.
69. *OTIS AFROIDES* (op. cit. p. 642).
Rare.
70. *CURSORIUS RUFUS* (op. cit. p. 653).
Scarce.
71. *ÆGIALITIS TRICOLLARIS* (op. cit. p. 662).
Common.
72. *CHETTUSIA CORONATA* (op. cit. p. 670).
Common.
73. *GALLINAGO NIGRIPENNIS* (op. cit. p. 676).
Fairly common.
74. *HYDROCHELIDON HYBRIDA* (op. cit. p. 699).
A female from the city dam.
75. *ARDEA PURPUREA* (op. cit. p. 710).
Common.
76. *BUBULCUS IBIS* (op. cit. p. 717).
Scarce.
77. *SCOPUS UMBRETTA* (op. cit. p. 725).
Scarce.
78. *CICONIA ALBA* (op. cit. p. 728).
Common.
79. *CICONIA NIGRA* (op. cit. p. 729).
Rare.
80. *IBIS ÆTHIOPICA* (op. cit. p. 736).
Scarce.

81. *PLATALEA TENUIROSTRIS* (op. cit. p. 742).
Only once obtained.
82. *THALASSORNIS LEUCONOTA* (op. cit. p. 761).
Rare.
83. *PODICEPS MINOR* (op. cit. p. 787).
Fairly common.

II. List of Birds of the Modderfontein District.

I now give a list of 75 species which I have met with at Modderfontein or in the surrounding district, and add a few remarks.

1. *GYPS KOLBI* (Sharpe & Layard, B. S. Afr. p. 1).
Common.
2. *SERPENTARIUS SECRETARIUS* (op. cit. p. 8).
Scarce.
3. *BUTEO DESERTORUM* (op. cit. p. 30).
Rare.
4. *ELANUS CÆRULEUS* (op. cit. p. 52).
Common.

I have found the nest of this bird in mimosa-bushes, blue gums, and firs. The structure is a rough platform of twigs slightly depressed in the centre, and lined with hair, wool, twine, &c. The usual number of eggs is three or four. Le Vaillant gives their colour as white, but I have never found them so; they are more in accordance with the description given in Sharpe and Layard's work, and are very similar to those of the South African Kestrel.

A female shot as she flew from a nest contained an egg which had a pure white ground blotched with the usual markings.

5. *CERCHNEIS RUPICOLA* (op. cit. p. 62).
Fairly common. (See Ibis, 1901, p. 193.)
6. *CERCHNEIS RUPICOLoidES* (op. cit. p. 63).
Fairly common. (See Ibis, 1901, pp. 16, 192.)

7. *BUBO MACULOSUS* (op. cit. p. 73).

Fairly common.

I have hunted these Owls on several occasions and have been struck by their splendid protective coloration. I discussed this at some length in a paper read before the Johannesburg Field Naturalists' Club. Mr. W. L. Distant, who has noticed this paper, says that it is "conscious concealment." I quite agree that the bird consciously conceals itself, but I fail to see of what use this would be under the circumstances, if the Owl had not protective coloration to assist it.

8. *SCOPS CAPENSIS* (op. cit. p. 75).

Very rare.

I only saw one specimen of this little Owl during the whole of my four and a half years of residence at Modderfontein. An account of its habits in captivity, as well as of its soft parts, will be found in the 'Zoologist' for 1899, p. 420.

9. *ASIO CAPENSIS* (op. cit. p. 78).

Common.

I shot three specimens of this Owl one afternoon. Six of them flew out of the long grass bordering a spruit.

10. *STRIX CAPENSIS* (op. cit. p. 81).

Not common. I shot one in a eucalyptus-plantation.

11. *CAPRIMULGUS EUROPÆUS* (op. cit. p. 83).

Not common.

12. *CAPRIMULGUS RUFIGENA* (op. cit. p. 85).

Rare.

13. *CYPSELUS CAFFER* (op. cit. p. 92).

Scarce.

I found a nest of this Swift under an overhanging bank in a donga. It contained two eggs, which were white, and were very suddenly rounded off at the small end.

14. *CORYTHORNIS CYANOSTIGMA* (op. cit. p. 108).

Scarce. One commonly sees a pair along the spruit and dongas.

15. *CERYLE RUDIS* (op. cit. p. 110).

Fairly common.

16. *HALCYON CYANOLEUCA* (op. cit. p. 120).

Very rare. Only one shot.

17. *UPUPA AFRICANA* (op. cit. p. 134).

Common.

A female of this species dropped an egg in my hand one day, of a pure white covered with tiny pores.

18. *CHRYSOCOCCYX CUPREUS* (op. cit. p. 153).

Common.

19. *PYCNONOTUS LAYARDI* (op. cit. p. 815).

Fairly common.

20. *COSSYPHA CAFFRA* (op. cit. p. 224).

Common.

21. *SAXICOLA MONTICOLA* (op. cit. p. 246).

Fairly common.

22. *PRATINCOLA TORQUATA* (op. cit. p. 250).

Fairly common.

23. *DRYMÆCA FLAVICANS* (op. cit. p. 254).

Fairly common.

24. *CISTICOLA TERRESTRIS* (op. cit. p. 824).

Fairly common.

25. *APALIS THORACICA* (op. cit. p. 281).

Fairly common.

26. *NECTARINIA FAMOSA* (op. cit. p. 306).

Somewhat rare.

27. *CINNYRIS AMETHYSTINUS* (op. cit. p. 315).

Rare.

On the 3rd of September, 1899, I shot a young male of this species. I was puzzled by it, and therefore sent it to Mr. William Selater, of the Cape Town Museum, for identification. He said that it was of this species, but that the metallic sheen is usually developed on the forehead first, whereas this specimen had the whole of the throat of a

rich coppery colour and the head utterly devoid of metallic sheen.

Iris hazel-brown; bill and feet black. The bird was sucking the nectar from apple-blossoms, and uttered a plaintive "peep." On dissection it proved to be a male.

28. *HIRUNDO ALBIGULARIS* (op. cit. p. 364).

Scarce.

29. *HIRUNDO CUCULLATA* (op. cit. p. 370).

Scarce.

30. *LANIUS COLLARIS* (op. cit. p. 374).

Very common.

31. *LANIARIUS GUTTURALIS* (op. cit. p. 385).

Fairly common.

I have found the nest of this bird on several occasions in pea-bushes, with three eggs.

32. *BRADYORNIS SILENS* (op. cit. p. 404).

Fairly common.

33. *CORVUS CAPENSIS* (op. cit. p. 415).

Scarce.

I found a nest of this species on one occasion containing three eggs.

34. *CORVUS SCAPULATUS* (op. cit. p. 416).

Scarce.

35. *CORVULUR ALBICOLLIS* (op. cit. p. 417).

Scarce.

36. *LAMPROCOLIUS PHÆNICOPTERUS* (op. cit. p. 425).

Fairly common.

37. *SPREO BICOLOR* (op. cit. p. 429).

Very common.

38. *AMYDRUS MORIO* (op. cit. p. 431).

Scarce.

39. *HYPHANTORNIS VELATUS* (op. cit. p. 439).

Fairly common.

40. *VIDUA PRINCIPALIS* (op. cit. p. 453).
Common.
41. *VIDUA ARDENS* (op. cit. p. 455).
Rare.
42. *CHERA PROGNE* (op. cit. p. 458).
Very common.
43. *PYROMELANA ORYX* (op. cit. p. 462).
Very common.
44. *PYROMELANA TAHA* (op. cit. p. 465).
Common at times.
45. *ESTRILDA ASTRILD*-(op. cit. p. 470).
Common.
46. *ESTRILDA ERYTHRONOTA* (op. cit. p. 473).
Common.
47. *PASSER ARCUATUS* (op. cit. p. 479).
Very common.
48. *PASSER DIFFUSUS* (op. cit. p. 480).
Scarce.
49. *POLIOSPIZA GULARIS* (op. cit. p. 482).
Scarce.
50. *MACRONYX CAPENSIS* (op. cit. p. 530).
Common.
51. *MOTACILLA CAPENSIS* (op. cit. p. 547).
Common.
52. *COLUMBA PHÆONOTA* (op. cit. p. 559).
Scarce.
53. *TURTUR SEMITORQUATUS* (op. cit. p. 566).
Common.
54. *TURTUR CAPICOLA* (op. cit. p. 567).
Common.
55. *ŒNA CAPENSIS* (op. cit. p. 572).
Common.

56. *COTURNIX COTURNIX* (op. cit. p. 603).
Scarce.

57. *FULICA CRISTATA* (op. cit. p. 621).
Common.

58. *GALLINULA CHLOROPUS* (op. cit. p. 623).
Scarce.

59. *GALLINULA ANGULATA* (op. cit. p. 624).
Scarce.

60. *OTIS CAFFRA* (op. cit. p. 634).
Scarce.

61. *OTIS AFROIDES* (op. cit. p. 642).
Not common.

62. *ÆDICNEMUS CAPENSIS* (op. cit. p. 645).
Fairly common.

63. *CURSORIUS RUFUS* (op. cit. p. 653).
Fairly common.

64. *ÆGIALITIS TRICOLLARIS* (op. cit. p. 662).
Fairly common.

I found two fledglings on the mud amongst the weeds bordering one of the dams on November 20th, 1899. They were of a reddish-brown tint washed with blackish.

65. *CHETTUSIA CORONATA* (op. cit. p. 670).
Common.

66. *TOTANUS CANESCENS* (op. cit. p. 687).
Very rare. Only one shot.

67. *NUMENIUS ARQUATA* (op. cit. p. 692).
Very scarce.

I shot one specimen, and presented it to the Pretoria Museum.

68. *ARDEA CINEREA* (op. cit. p. 708).
Fairly common.

69. *ARDEA PURPUREA* (op. cit. p. 710).
Somewhat scarce.

70. *HERODIAS GARZETTA* (op. cit. p. 716).

Somewhat scarce.

71. *NYCTICORAX GRISEUS* (op. cit. p. 724).

Scarce. Only one shot.

72. *SCOPUS UMBRETTA* (op. cit. p. 725).

Common.

73. *THALASSORNIS LEUCONOTA* (op. cit. p. 761).

Common at times.

On April 21st, 1900, I took a nest of this Duck in a dam near here. It was placed on some weeds in about three feet of water, twenty yards from the shore. The eggs were six in number and of a greenish creamy-brown colour.

74. *PODICEPS CRISTATUS* (op. cit. p. 785).

Fairly common.

75. *PODICEPS MINOR* (op. cit. p. 787).

Fairly common.

XXXVI.—*Field-notes on Birds seen and collected during Eight Months' Stay on the Ruo and Shiré Rivers, B.C.A., 1898-99.* By A. BLAYNEY PERCIVAL, F.Z.S. *With Corrections and Additions by R. T. REID.*

[ALTHOUGH we have published in 'The Ibis' a long series of papers on birds transmitted to us from Nyasaland by Sir Harry Johnston, Col. Manning, Mr. Sharpe, and other kind friends, so little has been recorded of the mode of life of the feathered tribes of that country that we have thought it worth while to put together the field-notes made by Mr. A. Blayney Percival during his recent sojourn in the southern districts of British Central Africa.

Mr. Percival writes as follows:—

"During my stay of between seven and eight months in British Central Africa in 1898-99, I camped chiefly on the banks of the Shiré and Ruo Rivers, as being best suited to my requirements, and made Chiromo my headquarters and the general base for all my operations. Looking through

my diary, I find a most monotonous reference to fever. Much of my best work was spoiled because of this terrible plague of African life, and many a day's hunting was cut short by a sudden rise in my temperature. In England one talks of the weather, in Africa a man asks after your temperature.

"The journey to Chiromo up the Zambesi and Shiré Rivers is one full of interest to the naturalist. Bird-life abounds, hippopotami are constantly seen, and crocodiles are far too numerous to be agreeable. I had one very unpleasant experience, and that not quickly forgotten. One of the crew made a slip and went overboard, and though every effort was made to save him, he was quickly dragged under water and disposed of by these hungry brutes.

"During September 1898 I went up to the next station on the Shiré (Katunga's) in a steam-launch. The number of birds seen was marvellous, the trees overhanging the river being often entirely covered with Egrets or Ibises—in the first case looking quite white and in the latter black. But, for really startling beauty, nothing can come up to the Carmine-throated Bee-eaters. A hundred of these bright birds flitting along the river-banks in the sunshine is a sight never to be forgotten. We saw on this trip many water-birds—Ducks, Geese, Herons, and Waders. Among them was the pretty Spur-winged Plover, which warns the crocodiles and hippopotami of danger by its shrill whistle.

"After my dealings with Kaffirs and Zulus, I found the natives of Central Africa very trying. Where one boy had previously served for all my wants, I here needed three. My usual household was composed of five, but on hunting-days it swelled to twelve or fourteen, the prospect of fresh meat never failing to bring them in. My camp was a very simple affair, consisting of a light canvas tent, with kitchen-tent for boys, and so I was able to move about without much trouble.

"Central Africa, in the Chiromo district, is well summed up by men who know it as 'a paradise for the naturalist and a hell for fevers.'"

Mr. Percival is now in the British East African Service

and is Resident at Takunga (see above, p. 354, and 'Ibis,' 1901, p. 524).

Mr. Percival exhibited some of his birds and read notes on them at the meeting of the Zoological Society of June 6th, 1899 (see P. Z. S. 1899, p. 714).

Mr. R. J. Reid has kindly revised and arranged Mr. Percival's Field-notes.—EDD.]

1. *CORVUS SCAPULATUS* Daud. ; Shelley, Ibis, 1897, p. 531.

The common scavenger of Chiromo ; it is to be seen everywhere about the town, often in company with Vultures.

2. *DILOPHUS CARUNCULATUS* (Gm.) ; Shelley, Ibis, 1897, p. 531.

Only once seen, in August 1898, and then in a very large flock.

3. *PHOLIDAUGES VERREAUXI* Bocage ; Shelley, Ibis, 1894, p. 19.

A few seen during February and March.

4. *BUCHANGA ASSIMILIS*.

Dicrurus afer (Licht.) ; Shelley, Ibis, 1897, p. 532.

Rare, no specimens obtained.

5. *ORIOLOUS LARVATUS* Licht. ; Shelley, Ibis, 1897, p. 531.

Not common, but a fair number observed, usually in pairs.

6. *VIDUA PRINCIPALIS* (Linn.) ; Shelley, Ibis, 1896, p. 237.

Common in the marshes.

7. *STEGANURA PARADISEA* (Linn.) ; Shelley, Ibis, 1897, p. 529.

Not rare in the marshes.

8. *PENTHETRIA ARDENS* (Bodd.).

Coliipasser ardens Shelley, Ibis, 1896, p. 237.

Common in the marshes.

9. *PYROMELANA XANTHOMELÆNA* (Rüpp.) ; Shelley, Ibis, 1896, p. 237.

a. Ad. Ruo, January 1899.

10. *ZONOGASTRIS MELBA* (Linn.) ; Shelley, *Ibis*, 1894, p. 22.

a. Ad. Ruo River, February 1899.

Rare, always found in pairs.

11. *HYPOCHERA FUNEREA* (De Tarrag.) ; Shelley, *Ibis*, 1894, p. 21.

Rare.

12. *ESTRILDA MINOR* (Cab.) ; Shelley, *Ibis*, 1894, p. 22.
Very common.

13. *ESTRILDA ANGOLENSIS* (Linn.) ; Shelley, *Ibis*, 1893, p. 26.

Numerous in December in company with another small Waxbill.

14. *HYPHANTORNIS XANTHOPTERUS* Finsch & Hartl. ; Shelley, *Ibis*, 1893, p. 24.

Very common in the Elephant-marsh to the north of Chiromo.

15. *CINNYRIS GUTTURALIS* (Linn.).

A few seen about Ruo, but the bird was by no means common. It was just building in March, when I left.

16. *ENNEOCTONUS COLLURIO* (Linn.) ; Shelley, *Ibis*, 1894, p. 15.

Some were observed in December and January.

17. *PRIONOPS TALACOMA* Smith ; Shelley, *Ibis*, 1897, p. 532.

A few flocks of this species were seen near Liadzi.

18. *SIGMODUS TRICOLOR* (Gray) ; Shelley, *Ibis*, 1894, p. 470.

a. ♂ juv. Ruo, September 1898.

b. ♀. Ruo, November 18, 1898.

Common in the stretch of waterless country between Ruo and Liadzi, and also to the west of the Shiré; never seen near the rivers and very wary.

19. *CRATEROPUS KIRKI* Sharpe ; Shelley, *Ibis*, 1897, p. 534.

a. ♀. Ruo River, September 1898.

Common in the reed-beds of Ruo and Liadzi. Difficult to shoot, as it keeps low down in the reeds and bushes. Very noisy. Usually seen in parties of five or six.

20. *MUSCICAPA CÆRULESCENS* (Hartl.) ; Shelley, *Ibis*, 1897, p. 542.

a. Ad. Ruo River, November 1898.

21. *BIAS MUSICUS* (Vieill.) ; Sharpe, *Cat. B. Brit. Mus.* iv. p. 142 (1879).

a. ♀. Ruo River, November 17, 1898.

One female obtained and one other seen.

22. *SMITHORNIS CAPENSIS* (Smith) ; Shelley, *Ibis*, 1894, p. 14.

One only obtained, two others seen, in thick bush.

23. *TERPSIPHONE PERSPICILLATA* (Swains.) ; Shelley, *Ibis*, 1896, p. 234.

Not uncommon ; I found one nest, in February.

24. *HIRUNDO SMITHI* Leach ; Sharpe, *Cat. B. Brit. Mus.* x. p. 150 (1885).

a. Ad. Chiromo, November 1898.

Breeding on almost every house in Chiromo, often inside the rooms. It builds a nest like the Common Martin, but of course much smaller. It is very tame.

25. *HIRUNDO PUELLA* Temm. ; Shelley, *Ibis*, 1894, p. 469.

a. Ad. Ruo River, August 1898.

Fairly common.

26. *PSALIDOPROCNE HOLOMELÆNA* (Sund.) ; Sharpe, *Cat. B. Brit. Mus.* x. p. 292 (1885).

A few were seen in shady parts of the bush, but seldom in the open during sunshine.

27. *PSALIDOPROCNE PERCIVALI* Grant, *Bull. B. O. C.* viii. p. lv (1899).

Psalidoprocne, sp. inc., Percival, *P. Z. S.* 1899, p. 715.

a. Ad. Ruo, August 1898. (Type of the species.)

This small but interesting Swallow was obtained at the

end of August 1898 on the river Ruo. It was in considerable numbers on this one occasion only, and during the nine months that I stayed in the district I never saw it again. It was flying high in the bright sunshine, unlike the other Saw-winged Swallows, which are seldom seen before dusk, when they fly low and usually among trees.

My specimen differs from the type of *P. antinorii*, in the British Museum, in having the gloss on the back greenish black instead of purple.

28. *DENDROPICUS CARDINALIS* (Gmel.); Hargitt, Cat. B. Brit. Mus. xviii. p. 295 (1890).

Rare. This was the only Woodpecker seen.

29. *INDICATOR MAJOR* Steph.; Shelley, Ibis, 1897, p. 545.

Not uncommon on the Liadzi. The natives have a strong objection to this bird being killed, for it shews them where the bees' nests are. I may mention here, that the native-collected wild honey in British Central Africa is nearly always uneatable. I was unable to find out the reason of the objectionable flavour. Honey obtained in the low country of the Transvaal and Swaziland is splendid stuff, very dark and rich in flavour.

30. *MELANOBUCCO TORQUATUS* (Dumont); Shelley, Ibis, 1897, p. 546.

A few were seen. I found a nest in a hollow tree.

31. *SCHIZORHIS CONCOLOR* (Smith); Shelley, Ibis, 1894, p. 7.

Rare, very few seen.

32. *CENTROPUS SENEGALENSIS* (Linn.); Shelley, Cat. B. Brit. Mus. xix. p. 361 (1891).

Extremely common on all the wooded banks of the rivers, particularly on the Liadzi.

33. *COCCYSTES CAFER* (Licht.); Shelley, Ibis, 1897, p. 545.

α. Ad. Ruo River, 1899.

These birds are very noisy. I obtained one out of a pair early in 1899.

34. COCCYSTES JACOBINUS (Bodd.); Shelley, Cat. B. Brit. Mus. xix. p. 217 (1891).

a. Ad. Ruo River, 1899.

Not uncommon, but difficult to shoot. Several of these birds were seen on the Elephant-marsh, helping *Chalcites cupreus* to clear the bushes of insects during the flood.

35. COCCYSTES GLANDARIUS (Linn.); Shelley, Cat. B. Brit. Mus. xix. p. 212 (1891).

I saw several of these birds, but only managed to bag one—a very fine male.

36. CHRYSOCOCCYX SMARAGDINEUS (Sw.); Shelley, Cat. B. Brit. Mus. xix. p. 280 (1891).

This beautiful bird is not uncommon in the more open bush near the Ruo. The male is very easily shot, for he will, during the early part of the breeding-season, take his post on a tall tree and utter his loud whistle, which can be heard for a great distance, remaining in the same place for hours together. These birds often haunt the same tree day after day. They are extremely pugnacious, and are frequently seen chasing one another high in the air. I obtained six males, but only one female.

37. CHRYSOCOCCYX KLAASI (Steph.); Shelley, Ibis, 1894, p. 7.

This species was much rarer than either the Emerald or the Golden Cuckoo, but was often to be heard calling. It was very seldom seen, as it keeps to low thick cover.

38. CHRYSOCOCCYX CUPREUS (Bodd.); Shelley, Ibis, 1894, p. 7.

This species arrives much sooner than the other Cuckoos. It is very noisy and not at all easily shot. At the end of February, when the floods were very bad at Chiromo, I was out in a canoe looking for specimens. In one place, where a few bushes stuck out above the water, I saw fully twenty individuals of this species, as well as many other insect-eating birds. On reaching the bushes I found out the reason; they were simply covered with insects driven up into

them for safety during the flood. In many of the bushes there were some small snakes and lizards. Most of these reptiles had been taken off by the various birds of prey that were at hand. I shot two of the Cuckoos, but found them useless, as they were in very poor plumage.

39. *CEUTHMOCHARES AUSTRALIS* Sharpe; Shelley, Ibis, 1897, p. 545.

I saw several of these birds in the very thick bush, and obtained two or three specimens.

40. *TACHORNIS PARVUS* (Licht.); Hartert, Cat. B. Brit. Mus. xvi. p. 463 (1892).

Very common. They roost in the leaves of the borassus palm.

41. *MICROPUS CAFFER* (Licht.); Hartert, Cat. B. Brit. Mus. xvi. p. 450 (1892).

Very few seen.

42. *CAPRIMULGUS FOSSII* Hartl.; Shelley, Ibis, 1897, p. 543.

a. ♀ ad. Ruo River, August 1898.

This small Nightjar was not widely spread over the district, as I only saw it or heard it at one place, and there I could put up six or eight in a hundred yards when walking through the rough grass and stones. I looked carefully for eggs, but never could find any, although the bird seemed to be in breeding condition.

43. *COSMETORNIS VEXILLARIUS* (Gould); Shelley, Ibis, 1894, p. 4.

Numerous among the foot hills of British Central Africa, usually on rocky ground. Males are often found in small flocks of five or six, females always singly. The male bird is easily recognised when flying, even without the long feathers, by the white bar across the wing.

44. *MELITTOPHAGUS ALBIFRONS* (Cab. & Heine); Shelley, Ibis, 1894, p. 5.

Common over the whole district. It breeds in colonies along with *Merops natalensis*, but later; while it does not

vanish as does the latter bird. It is usually seen in small parties of five or six.

45. *MELITTOPHAGUS MERIDIONALIS* Sharpe ; Shelley, Ibis, 1897, p. 544.

Common, usually seen in pairs.

46. *MEROPS NATALENSIS* Reichenb. ; Shelley, Ibis, 1894, p. 4.

Merops nubicoides Percival, P. Z. S. 1899, p. 715.

a. Ad. Ruo River, August 1898.

During the months of October and November these birds were numerous on the Ruo and Shiré Rivers, breeding in colonies in the steep banks in company with *M. bullockoides*, which they outnumber by ten to one. Early in December they seemed to vanish almost entirely, and from then till March I did not see more than two or three.

To see the face of a bank covered with these lovely birds, fluttering and clinging to the mouths of their nesting-holes, is a wonderful sight.

On the Ruo, native children snare many of them by setting a noose in the entrance to the nest. In one place I am sure that I saw fifty snares set, and in many of them a bird hanging, dead or dying. The nests are made of the fibres of an aloe. I asked one of the children what they did with the birds : " Eat them, of course," was his answer.

47. *DICROCERCUS HIRUNDINACEUS* (Vieill.) ; Shelley, Ibis, 1896, p. 230.

Not common, and only once or twice seen in parties of six or eight. It keeps to the trees more than the other species of Bee-eaters.

48. *IRRISOR VIRIDIS* Shelley, Ibis, 1893, p. 8.

Not common, very noisy, and difficult to approach.

49. *RHINOPOMASTUS CYANOMELAS* (Vieill.) ; Shelley, Ibis, 1897, p. 544.

A few were seen on the Liadzi River, usually in pairs, hunting around dead trees. Very tame.

50. *BUCORAX CAFFER* Bocage; Grant, Cat. B. Brit. Mus. xvii. p. 251 (1892).

Not uncommon in small flocks of five or six, where there is open bush country, particularly near rivers. It is very noisy before rain, calling all night and uttering its peculiar double booming cry.

In Natal and Swaziland *Bucorax cafer* is called the "Rain-bird."

The bare skin of the head and neck is very noticeable when the birds are seen even at a distance of one hundred yards or more. I did not obtain a single specimen, as they were so wild and wary.

51. *LOPHOCEROS MELANOLEUCUS* (Licht.); Shelley, Ibis, 1897, p. 544.

Not uncommon, and usually seen in small flocks. Very noisy. I read in my note-book, August 15th, 1898:—"Crowned Hornbills . . . are very numerous just now, in flocks of six or eight; they are quite fearless, and allow me to walk up to the tree on which they are sitting before moving."

52. *LOPHOCEROS EPIRHINUS* (Sundev.); Grant, Cat. B. Brit. Mus. xvii. p. 408 (1892).

Very few seen.

53. *CORYTHORNIS CYANOSTIGMA* (Rüpp.); Shelley, Ibis, 1897, p. 544.

Very common on all the streams or rivers of the Chiromo district.

54. *ALCEDO SEMITORQUATUS* Swains.; Shelley, Ibis, 1894, p. 467.

Not common on the Ruo or the Shiré.

55. *CERYLE RUDIS* (Linn.); Shelley, Ibis, 1897, p. 544.

Extremely common on the Zambesi and the Shiré, particularly at Fort Herald, on the Shiré, where I often saw parties of seven or eight of these birds together. Commonest in July and August.

56. *CERYLE MAXIMA* (Pall.) ; Shelley, Ibis, 1897, p. 544.
Rare. A very few seen.

57. *HALCYON CHELICUTENSIS* (Stanl.) ; Shelley, Ibis, 1897,
p. 545.

a. Ad. Shiré River, February 1899.

During July and August these birds were common and very noisy, calling continually ; but later they were scarce.

58. *HALCYON PALLIDIVENTRIS* Cab. ; Percival, P. Z. S. 1899,
p. 715.

a. ♂. M'lolo, Chiromo, December 4, 1898.

59. *SCOPS CAPENSIS* Smith ; Sharpe, Cat. B. Brit. Mus.
ii. p. 52, pl. iii. fig. 1 (1875).

I know this bird's call well, from hearing it so often in the Transvaal and in Swaziland, where I have shot specimens. In British Central Africa it was often to be heard at dusk, but it is almost impossible to locate the noise, and even if one does so it is by no means easy to see a little Owl in the dusk, for, even during the day, the bird is easily mistaken for the stump of a branch.

60. *GLAUCIDIUM PERLATUM* (Vieill.) ; Shelley, Ibis, 1897,
p. 549.

I saw only one specimen of this Owl, in August, among the borassus palms, and it was with great difficulty that I obtained it, for it dropped dead on one of the large leaves of a palm and was not easily dislodged.

61. *ASIO CAPENSIS* (Smith) ; Shelley, Ibis, 1894, p. 465.

On the voyage down the Shiré I saw an Owl, which was, I think, *Asio capensis* : it was flying quietly over the tops of the reeds during the afternoon—just as one sees the bird on the uplands of Natal.

62. *SYRNIUM WOODFORDI* (Smith) ; Shelley, Ibis, 1897,
p. 549.

a. ♀ ad. Ruo River, November 26, 1898.

An example of this Owl was obtained on the bank of the Ruo early one morning when my boys had called me to go after a flock of Geese. I did not get a shot at them, but

went up the river in my dugout for a mile or so, and saw the Owl fly into some thick cover on the bank of the river, so went ashore after it. I never saw another in the district.

63. *CIRCUS MACRURUS* (Gm.) ; Sharpe, Cat. B. Brit. Mus. i. p. 67 (1874)."

a. ♀ ad. Ruo River, November 23, 1898.

A pair of these Owls were for some days about my camp on the Ruo, near the Zoa Falls. They were very fond of washing, and every day came to the same sandbank in the river to have their bath, sitting in the water for an hour or more.

64. *POLYBOROIDES TYPICUS* Smith ; Shelley, Ibis, 1896, p. 229.

These birds were not uncommon, haunting the river-banks and palm-groves. They worked the palm-groves very carefully, flying from tree to tree, and examining all the leaves, more particularly those that were dead. They sometimes flew to a frond and hung down, alighting at the point, and half climbing, half flying up the frond, looking, I suppose, for small reptiles and shells. They were not easy to shoot, being very wary.

65. *ASTUR POLYZONOIDES* (Smith) ; Shelley, Ibis, 1897, p. 551.

a. Ad. Chiromo, Ruo River, July 30, 1898.

This pretty little Hawk was not uncommon around Chiromo in July, August, and the early part of September. After that time I did not see a single specimen. It is extremely tame and very easy to shoot, feeding mostly on insects and small birds. It is to be found in almost every palm-grove, and if disturbed only flies to the next tree, allowing one to walk right underneath before moving.

66. *ACCIPITER MINULLUS* (Daud.) ; Shelley, Ibis, 1896, p. 177.

A few of these pretty little Hawks are to be seen on the banks of the Ruo, where the thick bush comes down to the water. They seldom venture far thence, and are very

difficult to shoot. I saw one have a long hunt after a Warbler, which was in some cover, too thick for the Hawk to get through. I saw another kill a Weaver-bird.

67. *ASTURINULA MONOGRAMMICA* Temm. ; Shelley, Ibis, 1896, p. 229.

I obtained a very fine female of this Hawk on August 12: it was sitting gorged with termites, and allowed me to walk right up to it. This was just after a shower of rain, and the termites were out in thousands. It is a bird of the thick bush and is seldom seen out of it. I observed some four or five at different times, but always in the thickest cover. When flying away the white rump shews very distinctly.

68. *MACHÆRHAMPHUS ANDERSSONI* (Gurney) ; Sharpe, Cat. B. Brit. Mus. i. p. 343 (1874).

This bird is nocturnal and feeds on bats.

My specimen was obtained one evening in the early part of August, 1898, while I was waiting for Ducks. In flight the bird much resembles a Falcon ; in fact, until it came to hand, I thought that it was one. Its stomach was quite empty, and the bird itself in very poor condition. It was a young male in changing plumage.

One other example was seen near the Shiré River, some twenty-five miles from where I obtained my specimen. I spent almost the whole of one night watching for it, then told my gun-boy to stay, and promised him a reward if he got it; he saw it on the following evening, but did not get a shot. Later he brought me a female *Polyboroides typicus*, which he said was the right bird, and was anxious to have the reward.

I asked my boys the name of the bird and they all said it was Chic'a'babo ; but that name very likely covers several other Hawks as well.

69. *HALIAËTUS VOCIFER* (Daud.) ; Shelley, Ibis, 1897, p. 549.

By no means rare along the Zambesi and the Shiré, breeding both on rocks and in trees.

The name *vocifer* is very appropriate, for during the wet season the loud call of this Eagle may constantly be heard.

70. *LOPHOAËTUS OCCIPITALIS* (Daud.) ; Shelley, *Ibis*, 1897, p. 550.

a. Ad. Ruo River.

This is the commonest Eagle in the district. It is a sulky sort of bird, and will sit for hours on a dead branch with its feathers puffed out and eyes half-closed, looking more like a big Owl than anything else. It feeds chiefly on snakes and reptiles. Now and then it wakes up and soars to a tremendous height, where it sails round and round in circles, making a most peculiar noise, more like the drumming of a Snipe than anything else ; and, as with the Snipe, the sound is only made during a downward sweep.

71. *ERYTHROPUS DICKINSONI* (Scl.) ; Shelley, *Ibis*, 1897, p. 547.

a, b. Ad. Shiré River, August 1898, and February 9, 1899.

I obtained a female of this Falcon in August 1898, and a male on February 9, 1899, at almost the same spot, or one not more than two hundred yards distant, while on several other occasions I saw an individual about there. The birds are not wild, but scarce. They are usually seen amongst the borassus palms near the river.

72. *DENDROCYNNA VIDUATA* (Linn.) ; Shelley, *Ibis*, 1896, p. 240.

Very numerous.

73. *SARCIDIORNIS MELANONOTA* (Temm.) ; Shelley, *Ibis*, 1896, p. 240.

Only one specimen obtained.

74. *PLECTROPTERUS GAMBENSIS* (Linn.) ; Shelley, *Ibis*, 1894, p. 477.

Numerous in the early part of the year, but difficult to shoot.

75. HAGEDASHIA HAGEDASH (Lath.) ; Shelley, Ibis, 1897, p. 551.

I often saw a small party of these Ibises on the Ruo, but never managed to obtain any.

76. ARDEA PURPUREA Linn. ; Shelley, Ibis, 1897, p. 551.

This is the Common Heron of the Shiré. Individuals roost together during the day in the long reeds.

77. ARDEA GOLIATH Cretzschm. ; Shelley, Ibis, 1894, p. 27.

Not uncommon on the Zambesi, but rare on the Shiré. It likes to get out on open banks quite away from cover, and is very difficult to approach even within rifle-shot. My only specimen was obtained with a rifle.

78. NYCTICORAX NYCTICORAX (Linn.) ; Shelley, Ibis, 1896, p. 239.

Usually seen in small parties, but at a small island in the Shiré I put up fifty or more from one patch of reeds. They very soon settle again if disturbed during the day.

79. SCOPUS UMBRETTA (Gm.) ; Shelley, Ibis, 1894, p. 477.
Common.

80. HERODIAS INTERMEDIA Shelley, Ibis, 1896, p. 239.

Very common both on the Zambesi and the Shiré.

81. HERODIAS RALLOIDES (Scop.) ; Shelley, Ibis, 1896, p. 239.

a. Ad. Ruo River.

A few seen, but the bird is not common.

82. BUTORIDES ATRICAPILLA (Afzel.) ; Shelley, Ibis, 1894, p. 476.

a. ♀. Ruo River, February 10, 1899.

b. Ad. Ruo River, November 17, 1898.

Native name "Voom-Voo."

Fairly common on the Shiré and very noisy at night. It is a solitary bird, and is usually found in thick reeds. The stomachs of those I examined contained locusts and beetles.

83. *ARDETTA FUSILLA* Shelley, Ibis, 1894, p. 476.

Ardetta podiceps (Bp.); Sharpe, Cat. B. Brit. Mus. xxvi. p. 225 (1898).

Common in the marshes near the river. The males seemed to be much more common than the females. They kept to thick cover, as a rule, and perched on the reeds.

84. *ERYTHROCYNUS RUFIVENTRIS* (Sundev.); Sharpe, Cat. B. Brit. Mus. xxvi. p. 200 (1898).

I obtained only one specimen of this pretty little Heron, but saw one or two others; they are very wild. They settle high up on reeds, and so are able to see anyone approaching. Iris yellow; bare skin round eye greenish yellow; bill—upper mandible black, lower yellow with black tip; legs yellow.

85. *LEPTOPTILUS CRUMENIFER* (Cuv.); Shelley, Ibis, 1894, p. 477.

Numerous in the Elephant-marsh.

86. *PHYLLOPEZUS AFRICANUS* (Gm.).

Parra africana Shelley, Ibis, 1894, p. 25.

These graceful birds were to be seen wherever there was any floating weed or marshy bank. They were particularly common on the Portuguese side of Ruo, opposite Chiromo, and in a narrow stream which joined the Shiré above Chiromo, after coming through the Elephant-marsh. They were always in pairs or parties; it was a most unusual thing to see a solitary bird. They looked very pretty running about over the floating stuff or flying round. If two parties meet they will at once start to fight, following each other on the wing until one party or the other is driven off. If wounded they dive well, often taking hold of weeds under water and staying there.

87. *HIMANTOPUS CANDIDUS* Bonn.; Shelley, Ibis, 1894, p. 475.

Rare; I saw only two pairs during all my trips, and those escaped me. I watched them for some time feeding. They are good swimmers; one which I saw took quite a long swim across a channel.

88. *ÆGIALITIS PECUARIA* (Temm.) ; Shelley, Ibis, 1894, p. 474.

Common on almost every sand-bank along the Shiré and the Ruo, often in flocks of twenty or more.

89. *GLOTTIS NEBULARIUS*.

Totanus nebularius (Gunner) ; Shelley, Ibis, 1896, p. 238.
In small parties of four or five ; very noisy in the evenings.

90. *TOTANUS GLAREOLA* (Linn.) ; Shelley, Ibis, 1897, p. 553.

Usually found on marshy ground near the river, but occasionally along with *Æ. pecuaria* on the sand-banks. Seems to be rather a solitary bird.

91. *TEREKIA CINEREA* (Güldenst.) ; Sharpe, Cat. B. Brit. Mus. xxiv. p. 474 (1896).

I saw a small flock of this Sandpiper at Chinde, at the mouth of the Zambesi.

92. *LIMNOCORAX NIGER* (Licht.) ; Shelley, Ibis, 1894, p. 473.

a. Ad. Elephant-marsh, Ruo River, February 1899.

b. ♀. Ruo River, November 17, 1898.

Common, but difficult to shoot. A few were brought to me alive, having been snared in the marshes.

93. *PORPHYRIOLA ALLENI* (Thomps.) ; Sharpe, Cat. B. Brit. Mus. xxiv. p. 187 (1894).

a. ♂. Elephant-marsh, Ruo River, March 1899.

b, c. ♂ ♀. Ruo River, February 10, 1899.

Common in the Elephant-marsh, where I collected a very nice series during the floods, the birds being driven out of the thick cover. On March I found a nest in reeds with one egg, but I obtained another egg from the body of a female which I shot.

94. *PODICIPES CAPENSIS* Licht. ; Shelley, Ibis, 1896, p. 241.

a. Ad. Ruo River, February 1899.

Only one specimen obtained.

95. *VINAGO DELALANDII* (Bp.); Shelley, *Ibis*, 1895, p. 547.

Rare. Two or three birds were brought me from the hills to the west of the Shiré.

96. *CHALCOPELIA AFRA* (Linn.); Shelley, *Ibis*, 1897, p. 548.

Common. Feeds round the outside of the bush. Very quick on the wing.

97. *TYMPANISTRIA TYMPANISTRIA* (Temm.); Shelley, *Ibis*, 1897, p. 548.

Rare, or at least very rarely seen, keeping to the thickest bush.

98. *FRANCOLINUS KIRKI* Hartl.; Grant, *Cat. B. Brit. Mus.* xxii. p. 149 (1893).

Not uncommon—two or three nests found. The eggs of this bird are remarkably thick-shelled.

99. *NUMIDA CORONATA* Gray; Grant, *Cat. B. Brit. Mus.* xxii. p. 376 (1893).

Common on the banks of all the rivers. These birds always roost in the same trees, so that once the place is found one may be sure of getting them by waiting there at night. On one occasion I was called out early in the morning by my boys to shoot "Kanga," and was taken about a mile to a dusty patch near the path, and there I saw quite fifty birds sunning themselves. I managed to creep over a bank not twenty yards from them and secure all that I required.

During the heat of the day these Guinea-fowls may often be seen near the water, but are then very difficult to approach.

100. *TURNIX NANA* (Sundev.); Shelley, *Ibis*, 1897, p. 552.

Common in old native gardens.

101. *RHYNCHOPS FLAVIROSTRIS* Vieill.; Shelley, *Ibis*, 1893, p. 29.

These strange birds are fairly common on the upper waters of the Shiré, particularly between Maquera's and Katunga's. In my field-notes (Sept. 1898, Maquera's), I find—"The

Scissor-bills are very peculiar in their habits, as well as in appearance. They are common here, sitting during the day on the sand-banks. At night they skim about over the shallows, apparently with the long lower mandible in the water. They look very strange with the wings quite upright, reminding one of a Nightjar." They usually go in parties of four or five, and look very large in the dusk.

XXXVII.—*On the Syrinx and other Points in the Structure of Hierococcyx and some allied Genera of Cuckoos.* By FRANK E. BEDDARD, F.R.S. &c.

THE most recent estimate of the genera and species of Cuckoos known to science is contained in the lately issued 'Hand-list of Birds'*. In this list Dr. Sharpe enumerates no less than forty-six genera. Of these forty-six not more than twenty have been investigated anatomically, and most of them in but a fragmentary way. One cannot, therefore, help agreeing with Dr. Shufeldt in his reflection † that an elaborately detailed classification, such as that adopted by Dr. Sharpe from the previously published volume of the British Museum Catalogue dealing with the Cuculidæ, must necessarily contain much "guesswork." In spite of this scheme of classification, which, by reason of its authoritative issue, suggests finality, it is not possible at present to do more than indicate the very broadest lines along which subdivision of the Cuckoos should be proceeded with. It is desirable, therefore, to attempt an improvement upon this state of affairs, and to record as many new facts as possible about the anatomy of this comparatively little-known group of birds. From this may emerge a mode of arrangement of the Cuculidæ which shall be more satisfactory than that to which attention has just been drawn. With a view to being of assistance in the matter, I have

* 'A Hand-list of the Genera and Species of Birds,' vol. ii. pp. 155-175 (1900).

† "The Osteology of the Cuckoos (*Coccyges*)," Proc. Acad. Amer. Phil. Soc. xl. 1901, no. 165.

in the present communication to lay a few new facts before the readers of this Journal. These chiefly concern the genera *Hierococcyx*, *Rhamphococcyx*, and *Coccytes*, with regard to none of which have we at present any adequate knowledge of such anatomical features as might serve to indicate their relationship to allied genera. Some seventeen years ago I made an attempt* to arrange the Cuckoos according to the modifications in the feather-tracts, the structure of the syrinx, and the Garrodian leg-muscle formula. A subsequent investigation of the genera *Scythrops*† and *Carpococcyx*‡ served to support the arrangement which I originally proposed : and the new facts which I have now to record point in precisely the same direction.

Apart from subsidiary differences, the Cuckoos in their pterylosis present us with two chief modifications. In one series of birds the ventral feather-tracts are single on each side of the body. In the other series the same tracts are divided, and thus a more complicated pterylosis is arrived at. This more complicated pterylosis characterizes *Centropus*, *Carpococcyx*, *Scythrops*, *Eudynamis*, *Phænicophaës* and *Crotophaga*; the simpler ventral pterylosis, in which the tract is not divided again after its first separation into two branches on the neck, is to be found in *Cuculus*, *Piaya*, and other forms. In *Hierococcyx varius* the pterylosis is entirely upon the Cuculine plan. Each ventral tract is undivided. On the abdomen the rows of feathers constituting each tract are less in number than in the pectoral region. There are three distinct rows of feathers, each at some little distance from its neighbours. This arrangement into three rows is precisely what occurs in the genus *Cuculus*. In both the genera referred to these three rows approach each other some little way before the tract ends at the cloaca, and two

* "On the Structural Characters and Classification of the Cuckoos," P. Z. S. 1885, p. 168.

† "On the Anatomy of an Australian Cuckoo, *Scythrops novæ-hollandiæ*," P. Z. S. 1898, p. 44.

‡ "On the Anatomy of the Radiated Fruit-Cuckoo, *Carpococcyx radiatus*," Ibis, 1901, p. 200.

of them entirely disappear. Thus in *Hierococcyx*, in *Cuculus*, and in the allied genus *Cacomantis* the ventral tract of either side ends in a single row of feathers through the suppression of the two rows which are found in addition higher up in the tract.

The second feature which I believe to be of importance for purposes of classification is that afforded by the muscles of the thigh. Garrod had already on these grounds divided a Cuculine from a Centropine series*. And in my memoir upon the classification of this order or family I adopted the facts given by Garrod (adding somewhat to them) in my definitions of the three groups into which I proposed—and indeed still propose—to divide the existing Cuckoos. In *Centropus*, &c., the muscle-formula of the leg is the full formula A B X Y with the ambiens. In *Cuculus* and its allies the muscle-formula is reduced by the loss of B, the accessory femoro-caudal muscle. It will be observed that the loss of this muscle is coincident with the loss of the outer band of the ventral feather-tracts. One cannot help thinking that the apparent loss is a real loss in both cases, a reduction from a more complicated state of affairs. In any case there is no Cuckoo known with the formula A X Y which possesses the outer band of the ventral feather-tract; and, conversely, no Cuckoo known which possesses that outer band that has not also got the full muscular formula A B X Y.

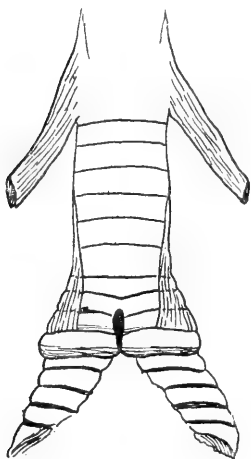
Hierococcyx proves to be no exception to this rule, at present universal. The muscle-formula of the thigh is A X Y with, of course, the ambiens muscle also.

The third structural feature upon which I based my attempted classification of the Cuculidæ concerns the form of the syrinx. This organ is developed along two lines in this group of birds. In many forms the syrinx is apparently of the most typical avian form, in which the intrinsic muscles of the syrinx are attached to a bronchial semi-ring close to the point at which the trachea divides into the two bronchi. This form of syrinx is generally known as the tracheo-bronchial, and is—as is well known—the most usual form

* Coll. Scientific Papers, ed. by W. A. Forbes, London, 1881, p. 220.

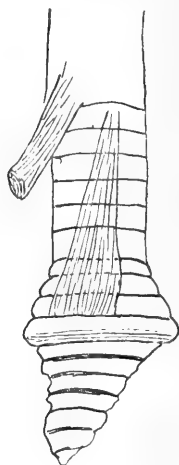
of the organ among birds. There is not, however, a complete coincidence between the existence of a tracheo-bronchial syrinx and the other two variable features in the anatomy of the Cuckoos. It is true that all Cuckoos with the reduced muscle-formula and a simplified ventral feather-tract have the tracheo-bronchial syrinx; but it is not true that all Cuckoos with the full muscle-formula and the more complicated ventral pterylosis are different also in the form of their syrinx. In fact, in *Eudynamis* and its allies the

Fig. 16.



End of trachea and bronchi
of *Hierococcyx varius* ;
ventral aspect.

Fig. 17.



End of trachea and
bronchus of the same ;
lateral aspect.

syrinx is of the tracheo-bronchial type, while the formula of the thigh is, as already stated, A B X Y with naturally divided ventral pterylosis. On the other hand, no Cuckoo is known which possesses the derived form of syrinx known as "bronchial" (in which the attachment of the syringeal muscles is much lower down the bronchi) that does not also possess the thigh-muscle formula A B X Y and has not the divided ventral tracts. It would be assumed, therefore, that *Hierococcyx*, having the reduced muscle-formula and

simplified ventral feather-tracts, would also possess a syrinx arranged on the tracheo-bronchial plan. This, again, is exactly the form of syrinx which that genus of Cuckoos does possess, and the following is a more detailed description of it. The syrinx of *Hierococcyx varius* is displayed in the annexed illustrations (figs. 16, 17, p. 602).

The last tracheal ring and the first three bronchial semi-rings are very plainly to be distinguished from the preceding tracheal rings and the succeeding bronchial semi-rings. They are obvious and different from them on account of their red colour. As will be gathered from this colour, the rings and semi-rings in question are ossified. But so also, though differing in colour, are the tracheal rings which precede. On the other hand, the bronchial semi-rings which follow after the first three are soft and cartilaginous. The pessulus of this syrinx is quite well developed. It marks by its origin on both sides of the windpipe the last tracheal ring. The three strong semi-rings which follow are thus plainly bronchial in spite of their resemblance to split tracheal rings, and their great difference from the soft cartilaginous bronchial rings which immediately ensue. Or, to be probably more accurate, they are really rings belonging to the tracheal section of the windpipe which have taken on the characters of bronchial semi-rings. This matter, however, will be referred to again in considering other forms of syrinx in this family of birds. *Hierococcyx* possesses the usual pair of intrinsic syringeal muscles, which are thin and not easy to see. These muscles fan out at their insertion, which is on the third bronchial semi-ring, of the three that are ossified, of course.

I shall now proceed to compare the windpipe of *Hierococcyx* with that of the closely related genus *Cuculus*. I gave in my earliest paper upon Cuckoo anatomy a brief account of the syrinx of *Cuculus canorus*. I may supplement this by a more detailed account of the syrinx of the Eastern *Cuculus micropterus*, a specimen of which, presented to the Zoological Society by Mr. E. W. Harper, of Calcutta, died in the Society's Gardens last year. The syrinx of this bird presents an interesting and significant departure in structure from

the syrinx of *Hierococcyx* just described. In *Cuculus micropterus* the rings which actually form the syrinx—*i. e.*, the last tracheal and the few first bronchial semi-rings—are of the same red colour as are those of *Hierococcyx*, and they are also ossified as in that species. But the difference is, that instead of only three rings which must be relegated to the bronchial series there are four of these semi-rings. The pessulus has, so to speak, moved a ring higher up; the trachea has been a little more split than in *Hierococcyx*. The thin intrinsic muscles are, as before, attached to the last of the specialized bronchial semi-rings; but in the present species that ring is naturally the fourth instead of the third. The pessulus is plainly seen, when the syrinx is viewed from behind, to bend upwards and to interfere between the otherwise closely approximated ends of the last tracheal ring. The split extremities of this ring do not meet except through the intervention of the end of the pessulus. There is no fusion between it and them. This state of affairs agrees exactly with my earlier description* of the syrinx of *Cuculus canorus*, to which I have already referred.

Clearly related to the two genera which have just been mentioned is the much smaller Cuckoo referred to the genus *Cacomantis*, also of Old World range. In a specimen of this genus (I am quite uncertain as to the species) I have examined the syrinx, and find it to be exactly like that of *Cuculus*, and so far different from the syrinx of *Hierococcyx*. In *Cacomantis*, in fact, there are, as in *Cuculus*, four tracheiform bronchial semi-rings which are ossified throughout. To the last of these are attached the slender intrinsic syringeal muscles. I have already referred *Cacomantis* to the Cuculine section of the family on account of the muscle-formula of the thigh and the characters of the ventral pterylosis. This finishes what I have now to say respecting the anatomy of forms closely related to *Cuculus*.

Before proceeding to add some new facts to our knowledge of the rather more remotely allied genus, *Coccytes*, I should like to point out certain features in which the group of

* P. Z. S. 1885, p. 170.

Cuckoos, containing the genera *Eudynamis*, *Scythrops*, and *Phœnicophaës*, resembles the Cuculine series. I have already indicated* the general likeness that exists between the syringes in these three genera and that in the genus *Cuculus*. There is, in fact, a very close resemblance; but the full Garrodian muscle-formula and the complicated pterylosis led me to place the group containing these genera midway between the Cuculine and the Centropine series. I have no reasons for doubting the correctness of that placing; and I may observe that Fürbringer† seems inclined to allow this arrangement, and to admit with me that *Eudynamis* and its allies are perhaps to be looked upon as ancestral forms from which the Cuculine series on the one hand and the Centropine on the other are to be derived. We should, therefore, expect to find in this group—or at least we should not be surprised to find there—a syrinx of a rather more primitive style of structure than in the hypothetically modified Cuculinæ. As a matter of fact, what we do find in the *Eudynamis* group are syringes shewing precisely the same characters as in the Cuculine group. This, however, is no bar to the derivation of the one series from the other. In my paper upon the anatomy of *Scythrops*‡ I made, as I find on re-examination of the syrinx of that bird, a slight error. I stated erroneously concerning *Scythrops* that the intrinsic muscles of the syrinx were attached to the second bronchial semi-ring. But I now find that they were attached to the third of those rings.

Among the allies of *Eudynamis* we therefore find syringes constituted upon two plans that are to be found in the Cuculine series. But since the Phœnicophainæ have some claims to be regarded as ancestral to the Centropinæ, we should expect to find some hints of a Centropine arrangement of the rings and muscles of the lower part of the windpipe. It is one of the objects of the present communication to shew that there is a hint of a development into

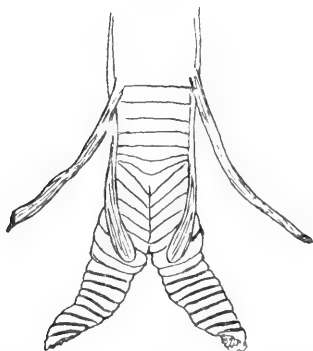
* P. Z. S. 1885, p. 172.

† Unters. z. Morph. u. Syst. d. Vögel (Amsterdam, 1888).

‡ P. Z. S. 1898, p. 44.

the bronchial syrinx of the Centropine Cuckoos in the genus *Rhamphococcyx*. This genus has not, so far as I am aware, been examined anatomically. Through the great kindness of Dr. Charles Hose, of Borneo, I have come into possession of two individuals belonging to as many species of this genus. The two species are *R. erythrognathus* and *R. microrhynchus*. The latter example is a hen, the former a cock. This genus, as might have been expected, has the complete Garrodian leg-muscle formula, as have the other Phœnicophainæ. The pterylosis is constructed upon the same plan, and in details is similar to that of its other allies. The ventral tract divides into two halves at the

Fig. 18.



End of trachea and bronchi of *Rhamphococcyx erythrognathus*; ventral aspect.

beginning of the neck, and leaves at first but a narrow space between the two. Each half, again, in the Centropine and Phœnicophaine manner, divides into two tracts. The exact point at which this division takes place is not easy to mark; the process of divergence of the outer row of feathers from the inner being so gradual. But, in any case, it is after a single row of strong feathers has been given off to the wing. After the separation of the two divisions of the ventral tract of each side, the stronger inner rows are con-

tinued in a straight line to the neighbourhood of the cloacal orifice: the row is at first composed of two feathers abreast; afterwards of but one. The outer part of the ventral tract, which ceases to exist a considerable way before the inner division, in fact at about the middle of the area of the insertion of the thigh, is only a single row wide; and the feathers composing this single row get further apart as the end of the short row is neared. As to the spinal tract, there appears to be no break between the more strongly feathered anterior region upon the neck and the less strongly feathered dorsal part of the tract. The anterior part undoubtedly bifurcates between the shoulders. This does not always appear to be the case with this portion of the dorsal tract among Cuckoos.

The syrinx (fig. 18, p. 606) is particularly interesting from the point of view of the *Phœnicophainæ*. The intrinsic syringeal muscles are attached to the sixth semi-ring in *R. erythrognathus*, and apparently to the fifth in the other species that I have examined, viz. *R. microrhynchus*. This state of affairs obviously approaches that characteristic of the Centropine syringes, where a large number of rings ensue between the bifurcation of the windpipe and the insertion of the syringeal muscles. I imagine that in all of these cases there has occurred, not so much a moving down of the point of insertion of the muscles in question, as a splitting of the tracheal part of the windpipe, whereby rings or semi-rings are apparently added to the bronchi. The tracheiform character of the first set of rings or semi-rings in the bronchi of the Centropine birds is plain; and it is equally plain in this genus *Rhamphococcyx*.

In *Coccytes* (represented for me by the species *C. jacobinus*) the syrinx is quite Cuculine in form; but, as might be supposed from the unquestionable distinctness of the genus, there are some few differences in detail from that of *Cuculus*. As in *Cuculus*, the intrinsic muscles are attached to the fourth semi-ring; but the rings are very much more slender than in *Cuculus* (and *Hierococcyx*), with wider interspaces of membrane, instead of abutting closely upon each other.

As to the other two structural features upon which I have relied in classifying this group, *Coccytes* entirely resembles *Cuculus*.

I think that these statements add to the probability of there being some basis of truth in my attempted arrangement of the Cuculidæ.

XXXVIII.—*Remarks on Two lately-described Australian Birds.* By P. L. SELATER.

(Plates XIV. & XV.)

AMONGST the new or little-known Australian birds which I exhibited at the meeting of the British Ornithologists' Club on the 19th of February last (see Bull. B. O. C. vol. xii. p. 50) were two of especial interest, one of them being of a genus new to Australia, if not to science, and the other a very fine new Parrakeet of the Platycercine group. Our excellent correspondent, Mr. A. J. North, C.M.Z.S., was very anxious that these novelties should be figured in 'The Ibis,' and we have great pleasure in being able to accede to his wishes. I take the opportunity of offering a few remarks on these two rare birds.

1. *EREMIORNIS CARTERI*. (Plate XIV.)

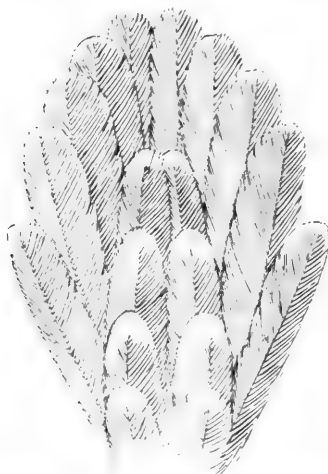
Eremiornis carteri North, Vict. Nat. xvii. p. 78 (Aug. 1900); id. op. cit. p. 93; Selater, Bull. B. O. U. xii. p. 51.

This new and very interesting bird was discovered by Mr. Tom Carter, of Point Cloates, Onslow, West Australia, at North-west Cape, near Exmouth Gulf. Mr. Carter shot two of these birds, which he met with "on barren rocky ranges in the dense *Spinifex* tufts," and forwarded one of them to Mr. North, who gave a full description of it as above quoted. While we agree with Mr. North that this bird is quite distinct from every other known Australian form, we are not so sure that it was necessary to make a new generic name for it. It is certainly very closely allied to the genus *Schænicola* of Blyth, of which two species are recognised—*S. platyura* of India and *S. apicalis* of Africa

(cf. Sharpe, Cat. B. vii. p. 109, 1883). At the same time it must be allowed that in *Schœnicola* the bill is shorter and stronger, the tarsi longer, and the feet larger, so that there are, perhaps, sufficient grounds for maintaining the genus *Eremiornis* for the Australian representative of this group.

One of the most remarkable features in *Eremiornis* (which, however, it shares with *Schœnicola*) is the enormous length of the under tail-coverts, some of which extend beyond

Fig. 19.



Under surface of the tail of *Eremiornis*, shewing the elongated under tail-coverts.

the extremity of the outer pair of rectrices. They carry a broad pale band at their ends, as shown in the accompanying figure (fig. 19). The rectrices are ten in number, as in most of the other Bradypterine Sylvians*. The upper tail-coverts, as will be seen by the coloured figure, are also much elongated, but this is a common feature in the Bradypterines.

The figure is taken from a specimen obtained by Mr. Carter at Point Cloates on February 20, 1902, and forwarded

* I agree with Dr. Sharpe (Cat. B. vii. p. 93) that the *Bradypteri* are allied to the Reed-Warblers, and, should be placed among the Sylvians.

by him to us. It is marked "♂. Irides hazel; bill horn-coloured; legs and feet purplish."

There is a nearly similar specimen in the British Museum, also a male, obtained by Mr. Carter at the same locality in November 1900. The lores are slightly reddish, and the white superciliary stripe rather more distinct.

2. *PLATYCERCUS MACGILLIVRAYI*. (Plate XV.)

Platycercus macgillivrayi North, Vict. Nat. xvii. p. 91 (Sept. 1900); id. op. cit. p. 113.

There can be no question about the distinctness of this beautiful addition to the Australian avifauna, but I thought it best to send the specimen to Count Salvadori, our supreme authority on the Psittacidæ, who has favoured me with the following remarks:—

"*Platycercus* (I should say *Barnardius*) *macgillivrayi* is a perfectly good species. Unfortunately I do not possess the 'Victorian Naturalist' containing the original description, but from the specimen inspected it is quite obvious that, although allied to *B. barnardi*, *B. macgillivrayi* has good claims to stand as distinct. The principal characters are as follows:—There is no red frontal band, the forehead is more bluish green, with a slight touch of yellow, the back is lighter green, the upper tail-coverts have a yellowish tinge, the breast is distinctly yellowish green, and the abdomen extensively yellow.

"Besides *B. macgillivrayi*, there is another addition to be made to the species described in the Catalogue—*B. occidentalis* North, Records Austr. Mus. ii. p. 83 (1893), allied to *B. zonarius*."

This fine species was discovered by Mr. Alexander Sykes Macgillivray in the Cloncurry district of Northern Queensland, and was described by Mr. North in the 'Victorian Naturalist,' as above quoted. It is said to be common about Cloncurry, which lies inland south of the Gulf of Carpentaria, and to extend to the shores of the Gulf of Normanton.

The specimen figured, kindly forwarded to me by Mr. North, is believed by him to be a male. It was procured at Cloncurry in 1901.

XXXIX.—*List of Birds obtained in British East Africa.*
By F. J. JACKSON, C.B., F.Z.S.—Part III.* *With Notes*
by R. BOWDLER SHARPE, LL.D. &c.

(Plate XVI.)

THE present paper carries the account of my East-African collection to the end of the *Picarian* Birds, and I trust that this and the concluding portion, which will be published shortly, will make my list of the birds of Uganda fairly complete.

Order PSITTACIFORMES.

260. *PŒOCEPHALUS MASSAICUS*.

Pœocephalus massaicus F. & R. ; Salvad. Cat. B. Brit. Mus. xx. p. 367 (1891) ; Sharpe, Ibis, 1892, p. 312 ; Reichen. Vög. deutsch. Ost-Afr. p. 99 (1894) ; Neum. J. f. O. 1899, p. 61 ; Sharpe, P. Z. S. 1900, p. 599 (Mt. Kenya).

Nos. 217, 218. ♂ ♀ ad. Mau, 8700 feet, Aug. 3, 1896. Upper mandible whitish horn-coloured, lower mandible slate-coloured ; feet whitish yellow ; iris red, with inner ring of yellow ; bare skin round eye yellow. Plentiful throughout the Mau forest district. In flocks of eight to ten. Very noisy.

No. 638. ♂ ad. Ravine, June 21, 1897.

No. 905. ♀ ad. Ravine, March 7, 1898.

Nos. 916, 917. ♀ ♂ ad. Ravine, March 9, 1898.

[The adult female is like the male in plumage. The bird in Mr. Jackson's collection described as the old female (Cat. B. *l. c.*) is really a young bird.—R. B. S.]

261. *PŒOCEPHALUS RUFIVENTRIS*.

Pœocephalus rufiventris (Rüpp.) ; Salvad. Cat. B. Brit. Mus. xx. p. 372 (1891) ; Sharpe, Ibis, 1892, p. 311 ; Reichen. Vög. deutsch. Ost-Afr. p. 95 (1894) ; Hartert, Ansorge's African Sun, p. 332 (1899: Voi River ; Mtoto Ndei) ; Neum. J. f. O. 1899, p. 61.

No. 18. ♀. River Tsavo, Jan. 20, 1892.

[The female of this species bears a close resemblance to

* See 'Ibis,' 1901, pp. 33-97.

the *P. meyeri* group of Parrots, but is at once distinguished by the grey, not yellow, under wing-coverts, by the lighter grey of the head and throat, and by the black lores and space round the eyes, these parts being naked.—R. B. S.]

262. *PŒOCEPHALUS MEYERI*.

Pœocephalus meyeri (Rüpp.); Salvad. Cat. B. Brit. Mus. xx. p. 373 (1891); Sharpe, Ibis, 1892, p. 312 (Turquel); Neumann, J. f. O. 1899, p. 62 (Qua Mtessa, N. Uganda; Kwa Kitoto, Kavirondo).

No. 244. ♂ ad. Elgeyu, 3700 feet, Aug. 13, 1896. Bill and feet dull slate-coloured; iris crimson. Fairly plentiful.

Nos. 257, 258. ♂ imm. Elgeyu, 3700 feet, Aug. 14, 1896. Iris dull yellow.

[The Elgeyu birds seem to me to be identical with specimens previously procured by Mr. Jackson in the Turquel district: they cannot be separated from examples of the true *P. meyeri*, and the distribution assigned to the species by Mr. Oscar Neumann receives confirmation. The rump is green with a distinct cast of blue, and the under surface inclines to dark emerald-green. The young birds are paler than the adults, being lighter greyish brown, with a decidedly paler under surface.—R. B. S.]

263. *PSITTACUS ERYTHACUS*.

Psittacus erythacus L.; Salvad. Cat. B. Brit. Mus. xx. p. 377 (1891); Reichen. J. f. O. 1892, p. 21 (Bukoba; Sesse Isl.); id. Vög. deutsch. Ost-Afr. p. 99 (1894); Neum. J. f. O. 1899, p. 60 (Usoga).

a, b. ♂ ad. Entebbe, Dec. 27, 28, 1894. Bill horn-black; feet slate-coloured; iris dark grey; bare skin of face white.

[There is considerable difference here in the tone of the grey plumage, one bird being decidedly darker than the other; but there is no sign of any admixture of red plumes, such as is seen in Equatorial examples.—R. B. S.]

264. *AGAPORNIS PULLARIA*.

Agapornis pullaria (L.); Salvad. Cat. B. Brit. Mus. xx.

p. 510 (1891); Sharpe, Ibis, 1892, p. 312 (Kitosh); Reichenow, J. f. O. 1892, p. 21 (Ikura Isl.); id. Vög. deutsch. Ost-Afr. p. 100 (1894); Neum. J. f. O. 1899, p. 63; Sharpe, Ibis, 1902, p. 109 (Entebbe).

a, b. ♂ ad.; *c, d.* ♀ ad. Entebbe, March 12, 1895.

Order CORACIIFORMES.

265. CORACIAS CAUDATUS.

Coracias caudatus L.; Sharpe, Cat. B. Brit. Mus. xvii. p. 21 (1892); id. Ibis, 1892, p. 516 (Machako's); Reichen. Vög. deutsch. Ost-Afr. p. 154, fig. 57 (1894); Hinde, Ibis, 1898, p. 582 (Machako's); Hartert, Nov. Zool. vii. p. 33 (1900); Neum. J. f. O. 1900, p. 209; Sharpe, P. Z. S. 1900, p. 600 (Nairobi Forest).

a. Ad. Ndi, Teita, Sept. 1894.

b. Ad. Ukambani, Sept. 1894.

266. CORACIAS GARRULUS.

Coracias garrulus L.; Sharpe, Cat. B. Brit. Mus. xvii. p. 15 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 123 (1894: Bagamoyo, Ussambira, Kagéhi); Hinde, Ibis, 1898, p. 582 (Machako's).

Coracias loquax Licht.; Reichen. Orn. MB. vii. p. 191 (1899).

Coracias garrulus loquax Neum. J. f. O. 1900, p. 208 (Pangani; Tanga).

No. 20. ♀ ad. River Tsavo, Jan. 24, 1892.

No. 938. ♂ ad. Kakelelwa, 4500 feet, April 1, 1898. Bill black; feet ochraceous yellow; iris brown.

[Prof. Reichenow suggests that the African form of Common Roller (*Coracias garrulus*) is distinct from the the European, as its head is more greenish and it has a greener tinge on the throat. I think that this is only because all the African birds are shot in the winter season. It is not the case that olive-green-headed birds are only to be found in Africa, for a greenish-headed specimen in the British Museum comes from Voronesch (Aug. 24), and one from Fao, killed by Mr. Cumming on the 26th of August,

is moulting from a blue head into an olive-green one: this shews that *C. garrulus* has a dull-crowned winter plumage. *C. loquax* Licht. is to be added as a synonym of *C. garrulus*.—R. B. S.]

267. EURYSTOMUS AFER.

Eurystomus afer, var. *rufobuccalis* Reichen. J. f. O. 1892, p. 27 (Manjongo, Uganda).

Eurystomus afer (Lath.); Reichen. Vög. deutsch. Ost-Afr. p. 125, fig. 58 (1894); Hartert, Ansorge's African Sun, p. 332 (1899: Kampala; Kibwesi); id. Nov. Zool. vii. p. 33 (1900: Kilgurma, Uganda); Neum. J. f. O. 1900, p. 209; Sharpe, Ibis, 1902, p. 109 (Entebbe).

a. ♀ ad. Samia, Kavirondo, Nov. 13, 1894. Bill yellow; feet scaly greenish horn-coloured; iris brown.

b. ♀ ad. Kampala, March 20, 1895.

c, d. ♂ ♀ ad. Kampala, April 2, 1895.

Nos. 525, 526. ♂ ♀ ad. Ravine, March 8, 1897.

These birds are generally found singly or in pairs, when they take up some commanding position on a dead tree from which they watch for and swoop down on their prey of insects, which they take on the wing. They are often noticed high up in the air hawking for insects, twisting and turning about like a *Pratincola*. They are very noisy, and invariably attack any bird of prey that approaches them. In the stomach of the male was a large locust. Insects in others.

No. 989. ♂ ad. Nandi, April 15, 1898.

No. 1213. Nandi, 6500 feet, June 15, 1898.

a. Juv. —?

[Two specimens from Nandi are identified by Mr. Oscar Neumann as *E. rufobuccalis* of Reichenow. They are rather light cinnamon, and have dull blackish central tail-feathers and upper tail-coverts; the sides of the face shew very little lilac gloss. In looking over the large series of skins of *E. afer* in the British Museum, I find considerable variation in respect to the brilliancy of the plumage, and the darkest birds are from the forest regions; but it is decidedly curious that all the three specimens of *E. rufobuccalis* as

yet known come from Equatorial Africa. My impression is that this form consists of adult birds, probably freshly moulted into their cinnamon plumage.—R. B. S.]

268. *CERYLE RUDIS*.

Ceryle rudis (Linn.); Sharpe, Cat. B. Brit. Mus. xvii. p. 109 (1892); Reichen. J. f. O. 1892, p. 28 (Bare; Mengo); id. Vög. deutsch. Ost-Afr. p. 130 (1894); Hartert, Ansorge's African Sun, p. 336 (1899: Kibero and Mruli); Neum. J. f. O. 1900, p. 215 (Tanga).

No. 745. ♀ ad. Lake Naivasha, Aug. 9, 1897.

269. *CERYLE MAXIMA*.

Ceryle maxima (Pall.); Sharpe, Cat. B. Brit. Mus. xvii. p. 118 (1892); Reichen. J. f. O. 1892, p. 28 (Bukoba); id. Vög. deutsch. Ost-Afr. p. 130 (1894: Ugalla; Taweta); Neum. J. f. O. 1900, p. 214 (Tanga).

a. ♀ ad. Entebbe, Feb. 18, 1895.

b. ♂ ad. „ May 28, 1895.

[These specimens are apparently true *C. maxima*, and not *C. sharpii*, which Mr. Jackson got in the Sük country (cf. Sharpe, Ibis, 1892, p. 316).—R. B. S.]

270. *HALCYON SEMICERULEUS*.

Halcyon semiceruleus (Forskål); Sharpe, Cat. B. Brit. Mus. xvii. p. 232 (1892); id. Ibis, 1892, p. 317 (Turquel); Reichen. Vög. deutsch. Ost-Afr. p. 132 (1894); Jackson, Ibis, 1898, p. 141 (Witu); Hartert, Ansorge's African Sun, p. 335 (1899: Kibero; Kibwezi); Neum. J. f. O. 1900, p. 216 (Manjara Lake).

No. 398. E. Kamassia, Sept. 29, 1896.

No. 912. Ravine, 7500 feet, March 9, 1898.

[These examples seem to me to be inseparable from Abyssinian birds.—R. B. S.]

271. *HALCYON PALLIDIVENTRIS*.

Halcyon pallidiventris Cab.; Sharpe, Cat. B. Brit. Mus. xvii. p. 235 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 132 (1894: Udjidji; Ugalla River).

No. 1235. ♀ ad. Nandi, 6500 feet, June 24, 1898.

[I refer this specimen to *H. pallidiventris*, but with some doubt, as it has the centre of the breast and abdomen white like the throat, and the bird is evidently adult. I do not like to describe it as new from a single specimen.—R. B. S.]

272. *HALCYON CHELICUTENSIS*.

Halcyon chelicutensis (Stanl.); Sharpe, Cat. B. Brit. Mus. xvii. p. 239 (1892).

Halcyon chelicuti Reichenow, Vög. deutsch. Ost-Afr. p. 131 (1891); Hartert, Ansorge's African Sun, p. 336 (1899); id. Nov. Zool. vii. p. 34 (1900); Neum. J. f. O. 1900, p. 216.

Nos. 68, 69. ♂ ♀ ad. Kibwezi, 3000 feet, March 17, 19, 1892.

No. 13. ♂ ad. Entebbe, Sept. 15, 1895.

273. *HALCYON CYANOLEUCUS*.

Halcyon cyanoleucus (V.); Sharpe, Cat. B. Brit. Mus. xvii. p. 242 (1892); Reichen. J. f. O. 1892, p. 27 (Sesse Isl.); id. Vög. deutsch. Ost-Afr. p. 131 (1894: Itale).

a. ♀ ad. Entebbe, Dec. 22, 1894. Bill—lower mandible black, upper crimson-red; feet black; iris brown.

b. ♂ ad. Entebbe, March 10, 1895.

c. ♀ ad. „ May 26, 1895.

d. ♂ ad. „ Aug. 8, 1894.

274. *BUCORAX CAFER*.

Bucorax cafer (Schl.); Grant, Cat. B. Brit. Mus. xvii. p. 351 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 126, fig. 59 (1894); Neum. J. f. O. 1900, p. 210 (Pambire; Karagwe); Sharpe, Ibis, 1902, p. 110 (Ravine).

Bucorax abyssinicus Sharpe (nec Gm.), Ibis, 1892, p. 317 (Turquel).

a. Head. Busoga, Nov. 1894.

275. *LOPHOCEROS MELANOLEUCUS*.

Lophoceros melanoleucus (Licht., sen.); Grant, Cat. B. Brit. Mus. xvii. p. 399 (1892); Sharpe, Ibis, 1892, p. 318 (Savé, Mt. Elgon); Reichenow, Vög. deutsch. Ost-Afr. p. 128 (1894); Hinde, Ibis, 1898, p. 582 (Machako's); Hartert, Ansorge's African Sun, p. 334 (1899: Kibwezi);

id. Nov. Zool. vii. p. 33; Neum. J. f. O. 1900, p. 213 (Tanga); Sharpe, Ibis, 1902, p. 110 (Ravine).

a. Ad. Uganda. Nov. 20, 1894.

b. ♂ ad. Entebbe, July 7, 1895.

No. 331. ♀ ad. Kamassia, 6000 feet, Aug. 23, 1896. Bill dull carmine; feet black; iris dull pale yellow.

No. 1104. ♀ ad. Nandi, 6500 feet, May 15, 1898. Bill dull carmine, extreme basal edge yellow; bare part of cheeks greenish blue. Fairly plentiful in pairs, three or four being sometimes seen together.

276. LOPHOCEROS FASCIATUS.

Lophoceros fasciatus (Shaw); Grant, Cat. B. Brit. Mus. xvii. p. 402 (1892); Reichen. J. f. O. 1892, p. 26 (Mengo); Hartert, Nov. Zool. vii. p. 34 (1900: Tambue).

No. 7. ♂ ad. Entebbe, Aug. 26, 1895.

a. ♀ ad. Entebbe, Sept. 17, 1895.

277. LOPHOCEROS ERYTHORHYNCHUS.

Lophoceros erythrorhynchus (Temm.); Grant, Cat. B. Brit. Mus. xvii. p. 409 (1892); Sharpe, Ibis, 1892, p. 318 (Turquel); Reichen. Vög. deutsch. Ost-Afr. p. 128, fig. 60 (1894); Hartert, Ansorge's African Sun, p. 334 (1899: Kinani); id. Nov. Zool. vii. p. 33 (1900); Neum. J. f. O. 1900, p. 213 (Mkaramo; Maunsa).

Nos. 301, 302. ♂ ♀ ad. Elgeyu, 3700 feet, Aug. 19, 1896. Bill crimson-red, with black markings on base of lower mandible; bare skin of cheeks pinkish blue; iris dull yellow.

278. BYCANISTES SUBQUADRATUS.

Bycanistes subquadratus Cab.; Grant, Cat. B. Brit. Mus. xvii. p. 419 (1892); Sharpe, Ibis, 1892, p. 317 (Mt. Elgon).

a. ♀ ad. Uganda, Nov. 20, 1894.

b. ♂ ad. Entebbe, Feb. 6, 1895.

279. UPUPA AFRICANA.

Upupa africana Bechst.; Salvin, Cat. B. Brit. Mus. xvi. p. 14 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 137, fig. 64 (1894); Hinde, Ibis, 1898, p. 582 (Machako's);

Hartert, Ansorge's African Sun, p. 336 (1899: Mau and Kariandus); Neum. J. f. O. 1900, p. 220 (Mkaramo).

Upupa minor Shaw; Sharpe, Ibis, 1892, p. 319 (Machako's; Turquel).

No. 66. ♂ ad. Kibwezi, 3000 feet, March 17, 1892.

280. *IRRISOR ERYTHORRHYNCHUS*.

Irrisor erythrorhynchus (Lath.); Grant, Ibis, 1902, p. 433.

No. 253. ♂ ad. Elgeyu, 3700 feet, Aug. 14, 1896. Bill vermilion; feet coral-red; iris brown. Plentiful in small parties.

281. *IRRISOR DAMARENSIS*.

Irrisor viridis (nec Licht.); Hinde, Ibis, 1898, p. 582 (Machako's).

Irrisor damarensis Grant, Ibis, 1902, p. 434, pl. x. fig. 1.

No. 31. ♀ ad. Kibwezi, 3000 feet, March 7, 1892.

No. 87. ♂ ad. Ngomeni, April 4, 1892.

282. *IRRISOR JACKSONI*.

Irrisor jacksoni Sharpe; Salvin, Cat. B. Brit. Mus. xvi. p. 21, pl. iii. fig. 1 (1892); Sharpe, Ibis, 1892, p. 319 (Kikuyu); Hartert, Ansorge's African Sun, p. 337 (1899: Eldoma Ravine); id. Nov. Zool. vii. p. 35 (1900: Nairobi); Neum. J. f. O. 1900, p. 221 (Mau Forest); Sharpe, P. Z. S. 1900, p. 601 (Kenya Forest, 8000 feet).

No. 566. ♂ ad. Ravine, March 28, 1897. Bill, feet, and eyelids dark coral-red; iris brown. One out of a small family-party. Plentiful.

Nos. 964, 965. ♂ ♀ ad. Nandi Forest, April 10, 1898. Bill dark carmine; eyelids dark crimson; feet dusky coral-red; iris brown.

No. 1273. ♂ ad. Nandi, 6500 feet, July 8, 1898. Stomach contained beetles.

283. *RHINOPOMASTUS SCHALOWI*.

Rhinopomastus cyanomelas (V., part.); Salvin, Cat. B. Brit. Mus. xvi. p. 24 (1892); Reichenow, Vög. deutsch.

Ost-Afr. p. 138 (1894); Hartert, Ansorge's African Sun, p. 337 (1899: Samburu).

Rhinopomastus schalowi Neum. J. f. O. 1899, p. 221; Sharpe, Ibis, 1902, p. 110.

Nos. 486, 487. ♂ ♀ ad. Ravine, Feb. 26, 1897. Bill dark brownish black; feet black; iris brown. This is a scarce bird; on one other occasion only have I seen it. The pair were found in open bush country, and later all the Irrisors were never long in the same tree or bush, but kept flying from one to another.

Nos. 548, 549. ♂ ♀ ad. Ravine, March 21, 1897. Up to the present I have always seen these birds in pairs, creeping about in thick foliage, and clinging in all sorts of positions to the trunks of dead trees, looking for beetles, spiders, and other insects. I have not heard them call, like the large *Irrisor jacksoni*.

[The characters given by Mr. Oscar Neumann hold good in the case of Mr. Jackson's series, but the Nyasaland birds are also apparently *R. schalowi*. Birds from Manda Island (*Jackson*) and Doruma (*Hunter*) appear to be true *R. cyanomelas*, while some of the Mashona specimens are slightly intermediate.—R. B. S.]

284. RHINOPOMASTUS CABANISI.

Rhinopomastus cabanisi (De Fil.); Salvin, Cat. B. Brit. Mus. xvi. p. 26 (1892); Sharpe, Ibis, 1892, p. 319 (Butzsuma); Reichen. Vög. deutsch. Ost-Afr. p. 138 (1894: Taweta; Ugogo; Wembere Steppes); Neum. J. f. O. 1900, p. 223 (Kibaya).

a. Ad. Kikuyu.

b. Imm. Kinani, Sept. 1894.

No. 267. ♂ ad. Elgeyu, 3700 feet, Aug. 15, 1896. Bill orange-red, tip dull black; feet black; iris brown. Only one seen.

285. MELITTOPHAGUS CYANOSTICTUS.

Melittophagus cyanostictus Cab.; Sharpe, Cat. B. Brit. Mus. xvii. p. 48, pl. i. fig. 3 (1892); id. Ibis, 1892, p. 319 (Mount Elgon); Reichen. Vög. deutsch. Ost-Afr. p. 136

(1894); Hinde, Ibis, 1898, p. 583 (Machako's); Hartert, Nov. Zool. vii. p. 35 (1900: Mubende); Sharpe, Hand-l. B. ii. p. 237 (1900); id. Ibis, 1902, p. 110 (Lake Baringo).

Melittophagus sharpei Hartert, Bull. B. O. C. x. p. xxvii (1899); Sharpe, Hand-l. B. ii. p. 72 (1900).

Melittophagus pusillus cyanostictus Neum. J. f. O. 1900, p. 219 (Tanga; Umlugwe).

No. 103. ♂ ad. Ndara, Teita, April 7, 1892.

No. 308. ♀ ad. Elgeyu, 3700 feet, Aug. 20, 1896. Bill black; feet scaly brown; iris crimson.

286. MELITTOPHAGUS PUSILLUS.

Melittophagus pusillus (P. L. S. Müll.); Sharpe, Cat. B. Brit. Mus. xvii. p. 47, pl. i. fig. 5 (1892).

a. Ad. Kikuyu.

Nos. 56, 57. ♂ ad. Entebbe, Oct. 4, 1895.

No. 1105. ♂ juv. Nandi, 6000 feet, May 15, 1898.

287. MELITTOPHAGUS VARIEGATUS.

Melittophagus variegatus (Vieill.); Sharpe, Cat. B. Brit. Mus. xvii. p. 48 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 136 (1894: Bukoba).

Melittophagus sonnini Boie; Reichen. J. f. O. 1892, p. 29 (Mengo; Uliambiri).

a. ♀ ad. Entebbe, Jan. 13, 1895. Bill black; feet brown; iris crimson.

288. MELITTOPHAGUS OREOBATES. (Plate XVI. fig. 1.)

Melittophagus oreobates Sharpe, Ibis, 1892, p. 320 (Savé, Elgon; Kimangitschi); Neum. J. f. O. 1900, p. 219 (Marangu; Loita Mts.); Sharpe, P. Z. S. 1900, p. 602 (Nairobi Forest).

No. 963. ♂ imm. Nandi Forest, April 10, 1898. Bill black; feet dull slate-coloured; iris brown.

No. 1139. ♂ ad. Nandi, 6500 feet, May 23, 1898.

No. 1207. ♂ ad. Nandi, 6500 feet, June 13, 1898. Scarce. Seen in small flocks of three or four.

289. MELITTOPHAGUS ALBIFRONS.

Melittophagus albifrons (Cab. & Heine); Sharpe, Cat. B.

Brit. Mus. xvii. p. 53 (1892) ; id. Ibis, 1892, p. 320 (Masailand).

Melittophagus bullockoides (Smith); Reichen. Vög. deutsch. Ost-Afr. p. 136 (1894: Rovuma River; Usegúha).

Merops bullockoides Hartert, Ansorge's African Sun, p. 336 (1899: Lake Naivasha; Kedong).

No. 259. ♂ ad. Elgeyu, 3700 feet, Aug. 14, 1896. Bill and feet black; iris brown. Plentiful.

Nos. 391, 392. ♀ ad. E. Kamassia, Sept. 28, 1896. Plentiful in flocks.

No. 466. ♂ ad. Ravine, Feb. 19, 1897. Resident throughout the year and plentiful throughout the district. Breeding in a bank in a colony, in holes about two feet and a half deep; no lining. Eggs, two or three, much incubated. Several nests with young.

Nos. 490, 491. ♂ ♀ ad. Ravine, Feb. 28, 1897. Colony of about ten or fifteen pairs breeding in a bank by a dry stream. Holes about two to three feet deep; no lining. Eggs, two or three, laid on bare earth.

Nos. 761, 813. ♂ ♀ ad. Lake Naivasha, Aug. 12, 29, 1897.

290. MEROPS APIASTER.

Merops apiaster Linn.; Sharpe, Cat. B. Brit. Mus. xvii. p. 63 (1892) ; id. Ibis, 1892, p. 319 (Marungu; Sotik); Reichen. Vög. deutsch. Ost-Afr. p. 135 (1894); Hartert, Ansorge's African Sun, p. 336 (1899: Muani); Neum. J. f. O. 1900, p. 218 (Umbugwe).

No. 952. ♂ ad. Nandi, 5500 feet, April 9, 1898. Bill black; feet blackish brown; iris crimson. Shot out of a small flock.

291. MEROPS SUPERCILIOSUS.

Merops superciliosus Linn.; Sharpe, Cat. B. Brit. Mus. xvii. p. 70 (1892); Reichen. J. f. O. 1892, p. 28; id. Vög. deutsch. Ost-Afr. p. 135, fig. 63 (1894).

No. 101. ♂ ad. Ndi-Ndara, Teita, April 7, 1892.

a, b. ♂ ♀ ad. Entebbe, Aug. 4, 1895. Bill black; feet scaly horn-coloured; iris crimson.

No. 362. ♂ ad. Molo River, Sept. 17, 1896.

292. *MEROPS ALBICOLLIS*.

Merops albicollis Vieill. ; Sharpe, Cat. B. Brit. Mus. xvii. p. 76 (1892) ; Reichen. J. f. O. 1892, p. 29 (Mengo ; Mjonjo ; Manjongo) ; id. Vög. deutsch. Ost-Afr. p. 134 (1894) ; Hartert, Ansorge's African Sun, p. 336 (1899 : Kampala ; Masindi) ; Neum. J. f. O. 1900, p. 217 (Ndalalani ; Pinnini).

a. ♂ ad. Entebbe, Dec. 31, 1894. Bill black ; feet pale olive-green ; iris crimson.

Nos. 271, 272. ♂ ad. Elgeyu, 3700 feet, Aug. 16, 1896.

No. 597. ♂ ad. Ravine, April 1, 1897. In small flocks of four or five.

293. *SCOTORNIS CLIMACURUS*.

Scotornis climacurus (Vieill.) ; Hartert, Cat. B. Brit. Mus. xvi. p. 596 (1892) ; id. Tierreich, Aves, Liefer. i. p. 29 (1897).

No. 65. ♂ ad. Entebbe, Oct. 8, 1895.

294. *CAPRIMULGUS NATALENSIS*.

Caprimulgus natalensis Smith ; Hartert, Cat. B. Brit. Mus. xvi. p. 564 (1892) ; id. Tierreich, Aves, Liefer. i. p. 44 (1897).

a. ♀ ad. Entebbe, March 5, 1895.

b. ♂ ad. „ May 9, 1895.

c. ♀ ad. „ July 10, 1895. Bill dusky ; feet pale brown ; iris brown.

[This is an interesting new habitat for the species. I cannot separate Mr. Jackson's specimens from typical *C. natalensis*.—R. B. S.]

295. *CAPRIMULGUS NIGRISCAPULARIS*.

Caprimulgus nigriscapularis Reichenow, Orn. MB. i. p. 31 (1893) ; Hartert, Tierreich, Aves, Liefer. i. p. 46 (1897).

a. ♂ ad. Entebbe, May 11, 1895. Feet brown.

[I do not think that there can be any doubt of this Nightjar being referable to *C. nigriscapularis*, with the main features of which it appears to agree. The breast and abdomen in Mr. Jackson's specimen are rufescent, regularly but narrowly barred with dusky blackish (this hardly suits Dr. Reichenow's diagnosis, "uropygio et abdomine fulvo

nigroque-fasciolatis”), and some of the tail-feathers are rufous with dusky blackish mottling and broken bars (“rectricibus fusco-nigris rufescente-variis” scarcely expresses the pattern). Seeing, however, that it agrees in the black spots of the scapulars, the marking of the quills, and in the habitat, I think that the slight differences mentioned above would not be of specific value. The first quill is unspotted, the second has a white spot on the inner web, and the third and fourth quills have white spots on each web, forming a band across these quills. Long. tot. 9·0, culm. a fronte basali 0·8, alæ 5·8, caudæ circa 4·75, tarsi 0·5.—R. B. S.]

296. *CAPRIMULGUS INORNATUS*.

Caprimulgus inornatus Heugl.; Hartert, Cat. B. Brit. Mus. xvi. p. 556 (1892); Sharpe, Ibis, 1892, p. 322 (Makarungu); Reichen. Vög. deutsch. Ost-Afr. p. 139 (1894: Usaramo); Hartert, Tierreich, Aves, Liefer. i. p. 29 (1897); Neum. J. f. O. 1900, p. 224 (Tanga).

No. 87. ♂ juv. Ravine, May 31, 1896.

297. *CAPRIMULGUS POLIOCEPHALUS*.

Caprimulgus poliocephalus Rüpp.; Hartert, Cat. B. Brit. Mus. xvi. p. 546 (1892); Sharpe, Ibis, 1892, p. 322 (Kiman-gitschi); Hartert, Tierreich, Aves, Liefer. i. p. 52 (1897).

No. 240. ♂ ad. Elgeyu, 5000 feet, Aug. 11, 1896. Bill black; feet brownish flesh-coloured; iris brown.

No. 522. ♂ ad. Ravine, March 7, 1897.

298. *CAPRIMULGUS TRIMACULATUS*.

Caprimulgus lentiginosus Smith; Hartert, Cat. B. Brit. Mus. xvi. p. 536 (1892).

Caprimulgus trimaculatus (Swains.); Hartert, Tierreich, Aves, Liefer. i. p. 55 (1897).

No. 937. ♀ ad. Kavirondo, 4500 feet, April 1, 1898. Bill black; feet brown; iris brown.

299. *CAPRIMULGUS EUROPEUS*.

Caprimulgus europæus Linn.; Hartert, Cat. B. Brit. Mus. xvi. p. 526 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 139

(1894 : Wembere Steppes) ; Hartert, Tierreich, Aves, Liefer. i. p. 57 (1897).

No. 506. ♀ ad. Ravine, March 4, 1897. Bill black ; feet scaly brown ; iris brown. Not nearly so plentiful as *C. frænatus*, from which it is easily recognised when on the wing by its larger tail and wings. It is also much more active, darting up and down more like a Bat in the way it twists and turns. The other skims along nearer to the ground. Stomach contained beetles and tree-bugs swallowed whole.

300. CAPRIMULGUS FRÆNATUS.

Caprimulgus frænatus Salvad. ; Hartert, Cat. B. Brit. Mus. xvi. p. 533 (1892) ; Sharpe, Ibis, 1892, p. 322 (Machako's) ; Hartert, Tierreich, Aves, Liefer. i. p. 59 (1897) ; Sharpe, P. Z. S. 1900, p. 600 (Mount Kenya, 10,000 feet).

No. 351. ♀ ad. Ravine. Bill, feet, and iris brown. This appears to be the most plentiful of the Goatsuckers.

No. 413. ♂ ad. Ravine, Feb. 23, 1896. Bill dusky black ; feet dusky brown ; iris brown. Plentiful. Stomach contained two large wood-boring Hymenoptera.

No. 488. ♀ ad. Ravine, Feb. 26, 1897. I found the nest of this bird with two eggs under a large bush on the bare ground. The eye of the parent, as she sat on the nest with the sun shining directly into it, was dull claret-coloured, and looked exactly as a bird does when blood forms in the eye when shot in the head.

Nos. 632, 637. ♀ ♂ ad. Ravine, April 15, 21, 1897.

301. CYPSELUS ÆQUATORIALIS.

Cypselus æquatorialis Müll. ; Sharpe, Ibis, 1892, p. 322 (Sotik).

Micropus æquatorialis Hartert, Cat. B. Brit. Mus. xvi. p. 441 (1892).

Apus æquatorialis Hartert, Tierreich, Aves, Liefer. i. p. 85 (1897).

No. 953. ♀ ad. Nandi, April 9, 1898. Bill black ; feet blackish brown ; iris brown. Flock of ten to a dozen,

together with the smaller species with white throat. Stomach contained large numbers of living bees and beetles.

[The above specimen belongs to the true *C. æquatorialis* (wing 7·95), like Mr. Jackson's former Sotik examples (wing 7·6–8·2), and not to the smaller *C. niansæ* of Reichenow, which has a wing under 6 inches.—R. B. S.]

302. *CYPSELUS SHELLEYI*.

Cypselus shelleyi Salvad. Ann. Mus. Genov. (2) vi. p. 227 (1888: Shoa); Hartert, Cat. B. Brit. Mus. xvi. p. 445, note (1892); Sharpe, Hand-l. B. ii. p. 95 (1900).

Apus shelleyi Hartert, Tierreich, Aves, Liefer. i. p. 86 (1897).

No. 225. ♂ ad. Mau, 7800 feet, Aug. 8, 1896. Bill black; feet brown; iris brown.

No. 877. ♂ ad. Nandi, 6500 feet, Feb. 16, 1898. In flocks in the evening, together with Swallows.

a. ♀ ad. Lake Naivasha, Sept. 10, 1898.

[The differences between *C. shelleyi* and *C. pekinensis* are very slight, and the blunter termination to the outer tail-feathers is a scarcely perceptible character.—R. B. S.]

303. *CYPSELUS BARBATUS*.

Micropus barbatus (Scl.) ; Hartert, Cat. B. Brit. Mus. xvi. p. 447 (1892).

Apus barbatus Hartert, Tierreich, Aves, Liefer. i. p. 86 (1897).

Cypselus barbatus Sharpe, Hand-l. B. ii. p. 96 (1900).

Nos. 223, ♀; 224, ♂ ad. Mau, 7800 feet, Aug. 8, 1896. Bill black; feet brown; iris brown. These specimens were shot out of one flock.

No. 936. ♂ ad. Kavirondo, 4500 feet, April 1, 1898.

[The female from Mau has very broad black streaks on the throat, as in Cape specimens of *C. barbatus*, but the other two examples have very fine streaks. The abdominal feathers all have white margins. It seems to me to be by no means impossible that *C. barbatus* is only the young of *C. apus* after its first autumn moult, though Mr. Hartert thinks otherwise. In any case *C. barbatus* is now found for the first time in East Africa.—R. B. S.]

304. *CYPSELUS STREUBELI*.

Cypselus streubeli Hartl.; Sharpe, Ibis, 1892, p. 322 (Jinji, Uganda).

Micropus streubeli Hartert, Cat. B. Brit. Mus. xvi. p. 452 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 143 (1894: Bussissi).

Apus caffer struebeli, Hartert, Tierreich, Aves, Liefer. i. p. 87 (1897).

Apus struebeli, Neum. J. f. O. 1900, p. 224 (Bulamwezi).

a, b. ♂ ♀ ad. Entebbe, Feb. 18, 1895.

305. *COLIUS MACRURUS*.

Colius macrurus (Linn.); Sharpe, Cat. B. Brit. Mus. xvii. p. 345 (1892); Reichen. Vög. deutsch. Ost-Afr. p. 105 (1894: Pare Mts.).

No. 397. ♂ ad. East Kamassia, Sept. 29, 1896. Tip of upper mandible and entire under mandible dull black; feet plum-coloured; iris dark crimson; eyelids Indian red; base of upper mandible coral-pink.

Nos. 450, 451. ♂ ♀ ad. Kedong Valley, Feb. 2, 1897.

306. *COLIUS BERLEPSCHI*.

Colius berlepschi Hartert; Sharpe, Ibis, 1902, p. 111 (Eldoma Ravine).

Nos. 45, 46. ♂ ♀ ad. Entebbe, Oct. 2, 1895.

Nos. 196, 197. ♀ ad. Ravine, July 24, 1896. Bill black with upper half horn-blue, lower mandible white; feet dark coral-red; iris, upper half yellow, lower half green. Nest in tree twenty feet from the ground, made throughout of dry stems of a creeper and a few dry leaves. Eggs three. Plentiful in small flocks of six to ten.

No. 372. ♀ ad. Njemps, Sept. 20, 1896.

No. 429. ♀ ad. Ravine, Nov. 28, 1896. Now in family parties; young birds without long tail-feathers.

No. 614. ♂ ad. Ravine, April 8, 1897.

No. 866. ♀ ad. Nandi, 6500 feet, Feb. 14, 1898. Now in flocks up to twenty in number.

Order TROGONES.

307. HAPALODERMA NARINA.

Hapaloderma narina (Steph.); Grant, Cat. B. Brit. Mus. xvii. p. 477 (1892); Sharpe, Ibis, 1892, p. 321 (River Kilini; Savé, Mt. Elgon); Reichen. Vög. deutsch. Ost-Afr. p. 122 (1894); Neum. J. f. O. 1900, p. 207 (Moschi; Ngare Dobasch; Tanga); Sharpe, P. Z. S. 1900, p. 601 (Nairobi Forest; Mt. Kenya).

No. 108. ♂ ad. Ravine, June 22, 1896. Bill greenish horn-coloured, base yellow; feet brownish flesh-coloured; bare skin of throat blue; iris crimson-brown. Fairly plentiful in the thick forest.

Nos. 234, 241. ♂ ♀ ad. Elgeyu, 5000 feet, Aug. 11, 1896. Bill greenish yellow at base, fading into bluish-white horn-colour; bare skin at base of gape behind eye soft green, with pale blue edges; feet pale brownish flesh-coloured; iris bright brown. Always on the edge of thick forest. Feeds on caterpillars, &c., and catches insects on the wing like a Flycatcher.

No. 612. ♀. Ravine, April 7, 1897. Iris crimson-brown; upper eyelid pale blue; bare patch behind eye yellowish green, with pale blue edges; patch at base of bill the same; bill bluish horn-coloured; base of lower mandible yellow; feet brownish flesh-coloured. Stomach full of tree-bugs, insects, &c.

No. 847. ♀ imm. Nandi Forest, 6000 feet, Feb. 10, 1898.

No. 908. ♀ ad. Ravine, 7500 feet, March 7, 1898. Bill dull yellowish green, base of lower mandible yellow; feet dusky flesh-coloured.

Order COCCYGES.

308. TURACUS LEUCOLOPHUS.

Turacus leucolophus Heugl.; Shelley, Cat. B. Brit. Mus. xix. p. 444 (1891); Sharpe, Ibis, 1892, p. 313 (Turquel; Mt. Elgon); Neum. J. f. O. 1899, p. 72.

No. 314. ♀ ad. Kamassia, 4000 feet, Aug. 21, 1896. Bill pale pea-green at base, shading into greenish yellow along the culmen and at the tip; feet black; iris brown; eyelids coral-red. Plentiful in the wooded water-courses.

309. *TURACUS HARTLAUBI*.

Turacus hartlaubi (Fischer & Reichen.) ; Shelley, Cat. B. Brit. Mus. xix. p. 445 (1891) ; Sharpe, Ibis, 1892, p. 313 (Kikuyu Forest ; Mt. Elgon) ; Reichen. Vög. deutsch. Ost-Afr. p. 103, fig. 46 (1894) ; Hartert, Ansorge's African Sun, p. 332 (1899 : Subugo Forest) ; id. Nov. Zool. vii. p. 31 (1900 : Nairobi) ; Neum. J. f. O. 1899, p. 72 (Mau) ; Sharpe, P. Z. S. 1900, p. 601 (Nairobi Forest) ; id. Ibis, 1902, p. 111.

No. 141. ♀ ad. Nandi, 6500 feet, June 2, 1896. Bill dull dusky carmine ; feet black ; iris brown ; eyelids bright coral-red.

No. 205. ♂ ad. Ravine, July 30, 1896. Very plentiful in the forests. In May I saw sixteen in one tree, attracted by a small fruit.

No. 1103. ♂ ad. Nandi Forest, May 14, 1898.

Nos. 1131, 1132. ♀ ♂ ad. Nandi Forest, 6000 feet, May 19, 1898.

310. *MUSOPHAGA ROSSÆ*.

Musophaga rossæ Gould ; Shelley, Cat. B. Brit. Mus. xix. p. 448 (1891) ; Reichen. J. f. O. 1892, p. 21 (Bukoba ; Sesse Island) ; Sharpe, Ibis, 1892, p. 313 (Mt. Elgon ; Kazamoja) ; Reichen. Vög. deutsch. Ost-Afr. p. 101 (1894) ; Hinde, Ibis, 1898, p. 581 (Machako's) ; Neum. J. f. O. 1899, p. 68 ; Sharpe, Ibis, 1902, p. 112.

a, b, c. ♀ ad. Entebbe, Dec. 18, 20, 28, 1894. Bill yellow, fading into orange-red at top of shield and sides of lower mandible ; iris brown.

311. *CORYTHÆOLA CRISTATA*.

Corythæola cristata (Vieill.) ; Shelley, Cat. B. Brit. Mus. xix. p. 449 (1891) ; Reichen. J. f. O. 1892, p. 21 (Mengo and Mjonjo) ; id. Vög. deutsch. Ost-Afr. p. 101 (1894) ; Neum. J. f. O. 1899, p. 67 (Entebbe) ; Hartert, Nov. Zool. vii. p. 31 (1900) ; Sharpe, Ibis, 1902, p. 112.

a. Ad. Buganda, Dec. 7, 1894. Bill bright yellow, tip in front of nostrils dull crimson ; feet black ; iris crimson ; bare skin round the eyes slate-coloured.

b. ♂ ad. Entebbe, Dec. 29, 1894.

312. SCHIZORHIS ZONURA.

Schizorhis zonura Rüpp.; Shelley, Cat. B. Brit. Mus. xix. p. 451 (1891); Sharpe, Ibis, 1892, p. 314 (Turquel; Kitosh); Reichen. J. f. O. 1892, p. 21 (Bukoba; Kimoani; Mengo; Mjonjo); id. Vög. deutsch. Ost-Afr. p. 101 (1894: Kagéyi); Sharpe, Ibis, 1902, p. 112 (Uvuma Island).

Chizaerhis zonura Neum. J. f. O. 1899, p. 68 (Bukoba).

No. 60. ♀ ad. Entebbe, Oct. 6, 1895.

a, b. ♂ ♀ ad. Busoga, Nov. 18, 1894. ♂. Bill pale pea-green; feet black; iris brown. ♀. Bill greenish yellow; feet dusky slate-coloured; iris brown.

313. SCHIZORHIS LEUCOGASTER.

Schizorhis leucogaster Rüpp.; Shelley, Cat. B. Brit. Mus. xix. p. 452 (1891); Sharpe, Ibis, 1892, p. 314 (Nzoni; Turquel); Reichen. Vög. deutsch. Ost-Afr. p. 102 (1894); Hinde, Ibis, 1898, p. 582 (Machako's); Hartert, Ansorge's African Sun, p. 332 (1899: Muani).

No. 1. ♀ ad. Damma, Dec. 23, 1891.

No. 100. ♂ ad. Ndi, Teita, April 6, 1892.

314. COCCYSTES CAFER.

Coccytes cafer (Licht.); Shelley, Cat. B. Brit. Mus. xix. p. 221 (1891); Reichen. J. f. O. 1892, p. 23 (Bukoba); id. Vög. deutsch. Ost-Afr. p. 109 (1894); Hartert, Nov. Zool. vii. p. 31 (1900: Karimia); Sharpe, Ibis, 1902, p. 113 (Lake Baringo).

No. 521. ♂ imm. Ravine, March 7, 1897. Bill black, gape yellow; feet horn-blue; iris brown. First seen, evidently a rare bird. Stomach full of caterpillars.

315. CUCULUS GULARIS.

Cuculus gularis Steph.; Shelley, Cat. B. Brit. Mus. xix. p. 244 (1891); Reichen. Vög. deutsch. Ost-Afr. p. 110, fig. 50 (1894: Kakoma; Karéma); Neum. J. f. O. 1900, p. 192 (Kwa Kitoto).

No. 69. ♂ ad. Lake Naivasha, April 20, 1896. Bill, base yellow shading into dull green, culmen and tip black; feet yellow; iris orange-red; eyelids greenish yellow.

Several seen along the road from Naivasha to Ravine, evidently migrating.

316. *CUCULUS CANORUS*.

Cuculus canorus Linn.; Shelley, Cat. B. Brit. Mus. xix. p. 245 (1891); Reichen. Vög. deutsch. Ost-Afr. p. 110 (1894); Neum. J. f. O. 1900, p. 193 (Tanga).

No. 78. ♂ ad. North of Elmiteita, April 25, 1896. Bill black with base of lower mandible greenish, fading into yellow at gape; feet yellow; iris pale brown; eyelids greenish yellow.

No. 629. ♂ ad. Ravine, April 14, 1897. Bill dull black, base of lower mandible horn-blue, gape yellow; iris dull yellow; eyelids bright yellow. Several seen within the previous few days. Stomach full of hairy caterpillars.

317. *CUCULUS SOLITARIUS*.

Cuculus solitarius Steph.; Shelley, Cat. B. Brit. Mus. xix. p. 258 (1891); Sharpe, Ibis, 1892, p. 315 (Mt. Elgon; Njemps); Reichen. Vög. deutsch. Ost-Afr. p. 109 (1894); Neum. J. f. O. 1900, p. 192 (Kibwezi; Moschi; Kwa Kitoto).

a. ♂ ad. Entebbe, March 10, 1895.

b. ♂ ad. Kampala, March 25, 1895.

c. ♀ ad. Entebbe, April 7, 1895.

d. ♂ pull. Entebbe, May 19, 1895.

No. 393. ♂ ad. E. Kamassia, 5000 feet, Sept. 28, 1896. Bill dusky black, lower mandible dusky yellow; feet light yellow; iris brown; eyelids yellow. Plentiful at Njemps. More often heard than seen.

318. *CUCULUS CLAMOSUS*.

Cuculus clamosus Lath.; Shelley, Cat. B. Brit. Mus. xix. p. 260 (1891); Reichen. Vög. deutsch. Ost-Afr. p. 111 (1894); Neum. J. f. O. 1900, p. 193 (Magila).

No. 554. ♀ imm. Ravine, March 24, 1897. Bill very dark brown, almost black; feet flesh-coloured, toes brown; iris dark brown. This is the first example of this species that I have met with.

No. 1007. ♂ imm. Nandi, 6500 feet, June 20, 1898.

I thought at one time that this Cuckoo was only a migrant, but I have found since that it is a resident, as several have been seen and heard of late.

No. 1206. ♂ imm. Nandi, 6500 feet, June 13, 1898.

319. METALLOCOCCYX SMARAGDINEUS.

Chrysococcyx smaragdineus (Swains.); Shelley, Cat. B. Brit. Mus. xix. p. 280 (1891); Sharpe, Ibis, 1892, p. 315 (Mararu, Teita); Reichen. J. f. O. 1892, p. 23 (Sesse Island); id. Vög. deutsch. Ost-Afr. p. 112 (1894); Neum. J. f. O. 1900, p. 194 (Moschi).

Metallococcyx smaragdineus Sharpe, Hand-l. B. ii. p. 161 (1900).

Nos. 21, 36, 41. ♂ ad. Kibwezi, 3000 feet, March 1, 9, 1892.

a. ♂ ad. Entebbe, April 29, 1895.

b. ♂ ad. „ May 8, 1895.

c. Ad. „ Aug. 2, 1895.

No. 1248. ♂ ad. Nandi, June 27, 1898. Bill dull pea-green, tip dusky brown; feet bright horn-blue; iris dark brown; eyelids pale bluish green. A scarce bird. Occasionally heard.

320. CHRYSOCOCCYX KLAASI.

Chrysococcyx klaasi (Steph.); Shelley, Cat. B. Brit. Mus. xix. p. 283 (1891); Reichen. J. f. O. 1892, p. 23 (Bukoba); id. Vög. deutsch. Ost-Afr. p. 111 (1894); Neum. J. f. O. 1900, p. 193 (Kwa Lubwa).

No. 26. ♀ ad. Kibwezi, 3000 feet, March 3, 1892.

a. ♂ ad. Entebbe, Dec. 31, 1894.

b. ♀ imm.; c. ♂ ad. Entebbe, May 8, 9, 1895.

No. 233. ♂ ad. Elgeyu, 5000 feet, Aug. 10, 1896. Bill dull pea-green with black tip; feet scaly greenish horn-coloured; iris brown; eyelids pale greenish blue.

No. 480. ♂ ad. Ravine, Feb. 23, 1897. Iris brown, with outer ring of dull yellow; eyelid green. First seen at the Ravine; evidently a scarce bird. Stomach full of insects.

321. CHRYSOCOCCYX CUPREUS.

Chrysococcyx cupreus (Bodd.); Shelley, Cat. B. Brit. Mus.

xix. p. 285 (1891) ; Sharpe, Ibis, 1892, p. 315 (Makarungu, Ukambani) ; Reichen. J. f. O. 1892, p. 24 (Bukoba ; Sesse Island) ; id. Vög. deutsch. Ost-Afr. p. 111 (1894) ; Hartert, Nov. Zool. vii. p. 32 (1900) ; Neum. J. f. O. 1900, p. 193.

No. 44. ♀ ad. Kibwezi, 3000 feet, March 11, 1892.

a. ♂. Entebbe, March 14, 1895.

322. CENTROPUS MONACHUS.

Centropus monachus Rüpp. ; Shelley, Cat. B. Brit. Mus. xix. p. 359 (1891) ; Sharpe, Ibis, 1892, p. 315 (Kikuyu) ; Reichen. J. f. O. 1892, p. 22 (Bukoba) ; id. Vög. deutsch. Ost-Afr. p. 107 (1894 : Kakoma ; Bussissi).

No. 167. ♀ ad. Nandi, 7000 feet, July 9, 1896. Bill black ; feet dark slate-coloured ; iris crimson. Several heard, but few seen.

No. 934. ♀ ad. Kavirondo, 4500 feet, March 28, 1898.

No. 1171. ♀ ad. Nandi, 6500 feet, May 25, 1898.

323. CENTROPUS SENEGALENSIS.

Centropus senegalensis (Linn.) ; Shelley, Cat. B. Brit. Mus. xix. p. 360 (1891).

No. 941. ♂ ad. Kavirondo, 4500 feet, April 7, 1898. Bill black ; feet slate-coloured ; iris bright crimson. Very plentiful.

324. CENTROPUS SUPERCILIOSUS.

Centropus superciliosus Hempr. & Ehr. ; Shelley, Cat. B. Brit. Mus. xix. p. 363 (1891) ; Reichen. J. f. O. 1892, p. 22 (Bukoba) ; id. Vög. deutsch. Ost-Afr. p. 107, fig. 49 (1894) ; Jackson, Ibis, 1898, p. 140 (Witu) ; Hartert, Ansorge's African Sun, p. 334 (1899 : Kampala) ; id. Nov. Zool. vii. p. 32 (1900 : Karimia) ; Neum. J. f. O. 1900, p. 191 (Naivasha Lake) ; Sharpe, Ibis, 1902, p. 113.

No. 69. ♂. Entebbe, Oct. 20, 1895.

325. CEUTHMOCHARES INTERMEDIUS.

Ceuthmochares intermedius Sharpe, Journ. Linn. Soc., Zool. xvii. p. 432 (1884 : Niam-Niam Country) ; Neum. J. f. O. 1900, p. 191 (Entebbe).

Ceuthmochares aereus (Vieill.) ; Reichen. J. f. O. 1892, p. 23 (Bukoba).

a. ♀ ad. Entebbe, Jan. 11, 1895.

b. ♀ ad. Entebbe, March 8, 1895. Bill yellow ; feet very dark horn-blue ; iris crimson ; bare skin round the eye greenish blue.

c, d. ♂ ♀ ad. Entebbe, April 28, 29, 1895.

Order SCANSORES.

326. INDICATOR VARIEGATUS.

Indicator variegatus Less. ; Shelley, Cat. B. Brit. Mus. xix. p. 7 (1891) ; Sharpe, Ibis, 1892, p. 309 (Savé, Mt. Elgon) ; Reichen. Vög. deutsch. Ost-Afr. p. 113 (1894) ; Neum. J. f. O. 1900, p. 194 (Moschi ; Kwa Kitoto).

No. 315. ♀ ad. Kamassia, 4000 feet, Aug. 22, 1896. Bill dark brownish black, with pale brown lower mandible ; feet olive-green ; iris brown. Fairly plentiful.

No. 1012. ♂ ad. Nandi, 6500 feet, April 20, 1898. Bill blackish brown, base of lower mandible dusky horn-coloured ; feet green.

327. INDICATOR TEITENSIS.

Indicator minor Steph. ; Shelley, Cat. B. Brit. Mus. xix. p. 9, part. (1891) ; Reichen. Vög. deutsch. Ost-Afr. p. 114 (1894).

Indicator minor teitensis Neum. J. f. O. 1900, p. 195.

No. 64. ♀ ad. Kibwezi, 3000 feet, March 17, 1892.

328. LYBIUS ÆQUATORIALIS.

Melanobucco æquatorialis Shelley, Cat. B. Brit. Mus. xix. p. 19, pl. i. (1891) ; Sharpe, Ibis, 1892, p. 309 (Savé, Mt. Elgon) ; Neum. J. f. O. 1900, p. 196 (Kwa Raschounjo ; Kwa Kitoto ; Kwa Kago) ; Sharpe, Ibis, 1902, p. 113 (Mount Ruwenzori).

Pogonorrhynchus æquatorialis Reichen. J. f. O. 1892, p. 26 (Bukoba) ; id. Vög. deutsch. Ost-Afr. p. 115 (1894).

Melanobucco bidentatus æquatorialis Hartert, Nov. Zool. vii. p. 32 (1900 : Kichuchu, Toru).

Lybius æquatorialis Richmond, Auk, xvii. p. 179 (1900); Sharpe, Hand-l. B. ii. p. 178 (1900).

a. ♂ ad. Entebbe, Dec. 22, 1894.

b. ♂ ad. Entebbe, Jan. 1, 1895. Bill white; bare skin of eye yellow; feet dark olive-brown; iris brown.

c. ♀ ad. Entebbe, June 6, 1895.

No. 925. ♀ ad. Nandi, 6500 feet, March 22, 1898. Bill white; skin of eye greenish yellow; feet black; iris brown, with greenish outer rim.

No. 982. ♀ ad. Nandi, 6500 feet, April 13, 1898.

No. 1003. ♀ ad. Nandi, 6500 feet, April 17, 1898.

No. 1234. ♀ ad. Nandi, 6500 feet, June 24, 1898. Bill yellowish white; bare skin of eye yellow; feet slaty brown, white line between tendon and tarsus; iris brown, with outer ring of silvery grey.

329. TRICHOLÆMA ANSORGII.

Tricholæma ansorgei Shelley, Bull. Brit. Orn. Club, v. p. iii (1895: Uganda); Sharpe, Hand-l. B. ii. p. 179 (1900).

a. ♂ ad. Entebbe, May 26, 1895.

b. ♂ ad. „ June 4, 1895.

c. ♂ ad. „ June 7, 1895. Bill black; feet scaly slate-coloured; iris dark crimson.

330. TRICHOLÆMA STIGMATOTHORAX.

Tricholæma stigmatothorax Cab.; Shelley, Cat. B. Brit. Mus. xix. p. 29, pl. ii. fig. 1 (1891); Sharpe, Ibis, 1892, p. 309 (Butzsuma); Reichen. Vög. deutsch. Ost-Afr. p. 116 (1894); Neum. J. f. O. 1900, p. 197 (Nguruman; Kibwezi).

a. ♂ ad. Tsavo-Maunga, Dec. 28, 1891.

b. ♂ ad. Kinani, Sept. 22, 1894. Bill black; feet scaly slate-coloured; iris brown. Very plentiful.

331. TRICHOLÆMA LACHRYMOSA.

Tricholæma lachrymosum Cab.; Shelley, Cat. B. Brit. Mus. xix. p. 31 (1891); Reichen. J. f. O. 1892, p. 25 (Bussissi; Bukoba; Kimoani); id. Vög. deutsch. Ost-Afr. p. 116 (1894); Hartert, Ansorge's African Sun, p. 335 (1899: Masongoleni); id. Nov. Zool. vii. p. 32 (1900: Kitagwetoa); Neum. J. f. O. 1900, p. 197 (Kikumbuliu).

Nos. 28, 29. ♂ ♀ ad. Kibwezi, 3000 feet, March 4, 1892.

332. *TRICHOLÆMA MASSAICA*.

Tricholæma massaicum (Reichen.) ; Shelley, Cat. B. Brit. Mus. xix. p. 34 (1891 : Masailand); Reichen. Vög. deutsch. Ost-Afr. p. 117 (1894); Neum. J. f. O. 1900, p. 198 (Kwa Raschuonjo).

No. 285. ♂ ad. Elgeyu, 3700 feet, Aug. 17, 1896. Bill dark slate-coloured; feet dark horn-blue; iris brown.

Nos. 681, 700. ♂ ad. Ravine, July 22, 27, 1897.

Nos. 746, 758 A, 759, ♀ ad.; 805, ♂ ad. Lake Naivasha, Aug. 9-26, 1897.

333. *GYMNOBUCCO CINEREICEPS*.

Gymnobucco cinereiceps Sharpe, Ibis, 1891, p. 122; 1892, p. 310 (Mt. Elgon); id. Hand-l. B. ii. p. 180 (1900).

Nos. 1118, 1119. ♂ ♀ ad. Nandi Forest, 6000 feet, May 19, 1898. Bill black, lower mandible with slaty marbling on lower side; feet black; iris bright straw-coloured. Appears to be fairly plentiful in thick forests. Several other individuals were seen in an opening in Nandi Forest, where large numbers of trees had been killed by fire.

334. *BARBATULA AFFINIS*.

Barbatula affinis Reichen.; Shelley, Cat. B. Brit. Mus. xix. p. 41 (1891); Reichen. Vög. deutsch. Ost-Afr. p. 117 (1894); Hartert, Ansorge's African Sun, p. 335 (1899 : Taru).

No. 25. ♀ ad. Kibwezi, 3000 feet, March 3, 1892.

a. Ad. Kinani, Sept. 22, 1894.

No. 690. ♂ ad. Ravine, July 24, 1897. Bill black; feet slate-coloured; iris brown.

335. *BARBATULA JACKSONI*. (Plate XVI. fig. 2.)

Barbatula jacksoni Sharpe, Bull. Brit. Orn. Club, vii. p. vii (1897 : Mau); id. Hand-l. B. ii. p. 182 (1900).

No. 101. ♂ ad. Ravine, June 19, 1896. Bill black; feet slate-coloured; iris brown. Fairly plentiful in the forest.

Nos. 572, 586. ♂ ♀ ad. Ravine, March 28, 30, 1897.

No. 979. ♂ ad. Nandi, 6500 feet, April 13, 1898.

No. 1023. ♂ ad. Nandi, 6500 feet, April 22, 1898. Plentiful. Makes a plaintive piping call.

No. 1242. ♂ ad. Nandi, 6500 feet, June 26, 1898. Very plentiful.

336. BARBATULA LEUCOLEMA.

Barbatula leucolema J. & E. Verr.; Shelley, Cat. B. Brit. Mus. xix. p. 45 (1891); Reichen. J. f. O. 1892, p. 25 (Bukoba; Manjonjo); id. Vög. deutsch. Ost-Afr. p. 117 (1894); Hartert, Ansorge's African Sun, p. 335 (1899: Mondo).

No. 42. ♀ ad. Entebbe, Oct. 2, 1895.

337. BARBATULA LEUCOMYSTAX.

Barbatula leucomystax Sharpe, Ibis, 1892, p. 310 (Sotik); id. Hand-l. B. ii. p. 182 (1900).

No. 517. ♀ ad. Ravine, March 7, 1897. Bill dark brownish black; feet dark slate-coloured; iris brown. Fairly plentiful. Breeding. I found a nest in February in the dead branch of tree. A small hole made by the birds. No nest. Eggs two, white, much incubated. Stomach full of yellow fruit.

338. TRACHYPHONUS ERYTHROCEPHALUS.

Trachyphonus erythrocephalus Cab.; Shelley, Cat. B. Brit. Mus. xix. p. 102 (1891); Sharpe, Ibis, 1892, p. 310 (Kikumbulu; Kitina); Reichen. Vög. deutsch. Ost-Afr. p. 119 (1894: Taweta); Neum. J. f. O. 1900, p. 199 (Umbugwe; Zaowi, Ulu Mts.; Taro Steppe).

No. 383. ♂ ad. Njemps, Sept. 26, 1896. Bill dusky pinkish brown; feet horn-blue; iris brown. Another seen. Not nearly so plentiful as *T. arnaudi*.

339. TRACHYPHONUS ARNAUDI.

Trachyphonus arnaudi (Des Murs); Shelley, Cat. B. Brit. Mus. xix. p. 105 (1891); Sharpe, Ibis, 1892, p. 311 (Turquel); Reichen. Vög. deutsch. Ost-Afr. p. 119 (1894); Neum. J. f. O. 1900, p. 199 (Ssero, N.W. Masailand).

Nos. 260, 261. ♂ ♀ ad. Elgeyu, 3700 feet, Aug. 14, 1896. Bill dusky horn-white; feet pale horn-blue; iris brown.

340. TRACHYLÆMUS ELGONENSIS.

Trachyphonus elgonensis Sharpe, Ibis, 1891, p. 122; 1892, p. 310 (Mt. Elgon).

Trachylæmus elgonensis Sharpe, Hand-l. B. ii. p. 187 (1900).

Nos. 133, 154. ♂ ad. Nandi, 6500 feet, July 1, 5, 1896.

Bill and bare skin of eye yellow; feet slate-coloured; iris crimson.

No. 907. ♀ ad. Ravine, 7500 feet, March 7, 1898.

No. 1190. ♂ ad. Nandi, 6500 feet, June 4, 1898. Bill and bare skin of face yellow; feet slaty black, edge of scales dull light green; iris brown. Breeding. I found a nest containing four young in an old Woodpecker's hole about forty feet from the ground. The tree was partly dead, and on the edge of a thick belt of forest. There were five or six other holes in the dead portion of the tree-trunk.

341. DENDROMUS NUBICUS.

Campothera nubica (Gm.); Hargitt, Cat. B. Brit. Mus. xviii. p. 93 (1890); Sharpe, Ibis, 1892, p. 307 (Savé, Mt. Elgon); Reichen. Vög. deutsch. Ost-Afr. p. 121 (1894).

Dendromus nubicus Neum. J. f. O. 1900, p. 202 (Nguruman; Ngaruka; Kwa Kitoto).

No. 399. ♂ ad. E. Kamassia, Sept. 30, 1896. Bill dusky slate-coloured; feet dark green; iris crimson.

No. 624. ♀ ad. Ravine, April 12, 1897. Scarce.

[The variation in a series of *Dendromus nubicus* is simply extraordinary, especially as regards the spotting and barring of the back and under parts. I have come to the conclusion that the barring of the flanks is more or less a sign of immaturity. The birds from the White Nile (true *D. nubicus*) differ slightly in the prominence of the spots of the under surface and the clearness of the white spots on the crown in the female, but I find that they can be matched by Abyssinian birds. Of the former, called by Dr. Reichenow *D. neumanni*, Mr. Jackson only got a single specimen, from Kamassia: this is coarsely marked, and has a few black spots continued up to the chin. This specimen, identified by Mr. Oscar Neumann as *D. neumanni*, can almost be matched by specimens from Shoa and Southern Abyssinia, Arabsyio and Jifa Medir in Somaliland. The Kamassia bird is the only one which has the spots continued up to the chin, but the black spots on the chest and the dark bars on the flanks are found in all the specimens above mentioned. At the same time

there are many other examples from Abyssinia which are hardly separable.

The following forms seem to require names :—

342. *DENDROMUS PALLIDUS*, n. sp.

♀. Similis *D. nubico*, sed notæo toto et alis distinctè et lætè albidis, vix aureo tinctis transfasciatis, et gastræi maculis nigris minoribus distinguendus. Long. tot. 7·3, culm. 0·9, alæ 4·0, caudæ 2·35, tarsi 0·7.

Typus in Mus. Brit. ex Lamu (*Jackson*).

The chief character for the separation of the Lamu Woodpecker is, of course, the complete and regular banding of the back and wings; but there are other characters, viz., the larger and closer white spotting on the crown and the much smaller number of spots on the under surface, especially on the under wing-coverts. The red on the head seems to me to be more scarlet than crimson, as is the case with *D. nubicus*.

There are three specimens, two females and a male, from Lamu, in the British Museum.

343. *DENDROMUS HARGITTI*, n. sp.

♀. Similis *D. punctato*, sed fronte et vertice antico nigris, albo punctulatis minime striolatis, remigum rachidibus brunneis nec aureis distinguendus. Long. tot. 78, culm. 0·95, alæ 4·35, caudæ 2·3, tarsi 0·85.

Typus in Mus. Brit. ex Semmio, Niam-Niam (*Bohndorff*).

Dr. Reichenow has made some remarks on African Woodpeckers in the 'Monatsbericht' for 1896 (p. 130). He points out that the bird identified by me and by Mr. Hargitt as *Picus balius* is not the true *P. balius* of Heuglin, which, from an examination of the type in Stuttgart, he declares to be scarcely separable from *P. punctatus* Val. The principal difference is that the upper surface is not spotted, but clearly cross-banded. Such a specimen is in the Museum from Senegambia, whence we have also several other individuals with spotted backs. I do not think that the banded bird can be specifically distinct from *P. punctatus*, but I believe that a large amount of variation in the spotting and banding of these African Woodpeckers is to be expected. At all events, it is clear that the banded birds are not peculiar to

N.E. Africa. It follows, therefore, that the bird from Niam-Niam is not *P. balius*, but requires a new name, which I propose shall be *Dendromus hargitti*. At the same time Professor Reichenow makes some important identifications respecting *Chrysopicus caillaudi* of Malherbe. This he considers to be identical with *D. malherbii*, and therefore he proposes the name of *Dendromus scriptoricauda* for the bird which Hargitt identified as *D. caillaudi*.

We have not, apparently, in the Museum a specimen of *Dendromus nyansa* of Neumann (J. f. O. 1900, p. 204) from Muansa, but the Museum contains three examples of *D. fülleborni* Neum. from Nyasaland: these have been identified by Captain Shelley as *D. malherbii*, but they really belong to the distinct form recently separated by Mr. Oscar Neumann.—R. B. S.]

344. DENDROMUS TÆNIOLÆMUS.

Campothera tæniolæma Reichen. & Neum. Orn. MB. 1895, p. 73 (Masailand and Eldoma Station, Mau); Hartert, Ansorge's African Sun, p. 335 (1899: Subugo Forest).

Dendromus tæniolæmus Neum. J. f. O. 1900, p. 205, pl. i. fig. 1; Reichen. Vög. Afrikas, ii. p. 172 (1890).

No. 400. ♂ ad. Ravine, Oct. 6, 1896. Bill dusky horn-coloured, base of lower mandible horn-blue, tip dusky; iris dark crimson. Amongst dead pine trees in the shambas. Several seen.

No. 635. ♀ ad. Ravine, April 19, 1897. Feet green. Scarce.

No. 1008. ♀ ad. Nandi, 6500 feet, April 19, 1898.

345. DENDROPICUS MASSAICUS.

Dendropicus guineensis massaicus Neum. J. f. O. 1900, p. 206 (Ndalalani).

Dendropicus cardinalis (part.) Hargitt, Cat. B. Brit. Mus. xviii. p. 295 (1890).

Nos. 46, 47. ♂ ♀. Kibwezi, March 11, 1892.

[This is a pale form of *D. cardinalis*, recalling by its lighter aspect the differences between *Dendromus jacksoni* and *D. nubicus*.—R. B. S.]

346. *DENDROPICUS SIMONI*.

Dendropicus simoni Grant, Bull. B. O. C. x. p. xxxviii (1900); id. Ibis, 1900, p. 304 (Konduro, Abyssinia).

Dendropicus simonis Sharpe, Hand-l. B. ii. p. 218 (1900).

No. 188. ♀ ad. Ravine, July 22, 1896. Bill slate-coloured; feet greenish horn-coloured; iris brown.

No. 189. ♀ ad. Ravine, July 22, 1896. Bill slate-coloured, lower mandible horn-blue with slate-coloured tip; feet olive-green; iris dark crimson.

No. 511. ♂ imm. Ravine, March 5, 1897. Fairly plentiful and frequently found on a dead tree. Makes very little noise when pecking, and unless one stands close up to or under the tree it cannot be heard.

No. 552. ♀ ad. Ravine, March 22, 1897.

No. 924. ♀ ad. Nandi, 6500 feet, March 22, 1898.

Nos. 1077, 1078. ♂ ♀ ad. Nandi, 6500 feet, May 6, 1898. Bill dark slate-coloured, lower mandible dusky horn-blue; feet olive-green; iris crimson-brown. This, the smallest of our Woodpeckers, is fairly plentiful in Nandi.

Nos. 1088, ♀ ad.; 1094, ♂ imm. Nandi, 6500 feet, May 9, 10, 1898.

No. 1164. ♂ ad. Nandi, 6500 feet, May 28, 1898.

[Prof. Reichenow (Orn. MB. 1901, p. 167) believes that *D. simoni* is *D. lepidus* (Cab. & Heine).—R. B. S.]

347. *THRIPIAS SCHOENSIS*.

Thripias schoensis (Rüpp.); Hargitt, Cat. B. Brit. Mus. xviii. p. 308 (1890).

Thripias namaquus schoensis Hartert, Nov. Zool. vii. p. 33 (1900: Nairobi).

No. 266. ♂ ad. Elgeyu, 3700 feet, Aug. 15, 1896. Bill dark horn-blue, lower mandible paler; feet slate-coloured; iris crimson. One of a pair.

No. 523. ♂ ad. Ravine, March 7, 1897.

[These specimens have quite a greenish shade on the under parts, as well as on the upper surface. I think, however, that this indicates freshness of plumage, as it is to be noticed in the specimen killed at Nairobi by the Mackinder Expe-

dition, and in a greater or less degree by other examples from Somaliland and the Niam-Niam country.—R. B. S.]

348. *MESOPICUS PŒOCEPHALUS*.

Mesopicus goertan (part.) Hargitt, Cat. B. Brit. Mus. xviii. p. 368 (1890); Sharpe, Ibis, 1892, p. 308 (Turquel).

Mesopicus goertæ centralis Reichen. Orn. MB. viii. p. 59 (1900).

Mesopicus pæocephalus (Swains.); Grant, Ibis, 1902, p. 425.

a. ♂ ad. Entebbe, March 13, 1895.

b. ♂ ad. Entebbe, May 18, 1895. Bill greenish horn-coloured; feet scaly slate-coloured; iris cinnamon-brown.

[Dr. Reichenow (Orn. MB. 1900, p. 58) has proposed to separate this species into four races, the first being the true *M. goertan* from Senegal. This is a bird with light olive-yellow back, while the under surface is very pale ashy, with a yellowish patch on the abdomen, sometimes indistinct and sometimes absent altogether. The light coloration, however, distinguishes this form, which is confined to Senegal.

M. goertan pæocephalus is said by Dr. Reichenow to differ in the paler and greyer tone of the olive-yellow of the upper surface, and in the middle of the belly being only slightly washed with a tint of orange-yellow. *Hab.* West Africa from Gambia to Loango.

M. goertan abyssinicus, from Abyssinia, Kordofan, and Sennar, is said to be distinguished by the darker olive-green of the upper surface and the scarlet abdominal spot, which is surrounded by a wash of yellow.

There is certainly more of a red spot on the abdomen in Abyssinian and Sudanese birds, but it is often absent altogether, and then there is no tangible difference between Eastern and Western birds. It is impossible to distinguish between a bird from Fashoda and one from the Fantee country.

M. goertan centralis is another race, according to Dr. Reichenow, found from the Gazelle River to the Niam-Niam and Sük countries. It is said to be like *M. g. abyssinicus*, but

with the under surface as in *M. pæocephalus*, the centre of the abdomen being only slightly washed with yellow.

I have six specimens from Niam-Niam now before me. All are clearly washed with yellow on the abdomen, and three of them (2 ♂, 1 ♀) have the centre of the belly scarlet.

All Mr. Jackson's specimens are washed with yellow, and one male has a distinct trace of scarlet on the centre of the lower breast and abdomen. They are rather light olive-yellow on the upper surface, and approach in tint typical *M. goertan* from Senegal.

In the case of Woodpeckers, birds which quickly wear their plumage out and get it soiled, it is very difficult to institute comparisons of specimens exactly in the same state of plumage; while in the case of *M. goertan*, I think that all the characters for the separation of races are very unstable, and I consider that Mr. Grant was right in saying that Dr. Reichenow's races cannot be upheld (*Ibis*, 1902, p. 425). Attention should be called to the way in which the bars on the wings and tail vary in extent, these being sometimes altogether absent on the latter. There are often dusky bars on the sides of the body, but most of these characters are indications of immaturity, as already pointed out by Mr. Hargitt (*Cat. B.* xviii. p. 370).—R. B. S.]

349. *IYNX PECTORALIS*.

Iynx pectoralis Vig.; Hargitt, *Cat. B. Brit. Mus.* xviii. p. 565 (1890); Sharpe, *Ibis*, 1892, p. 308 (Savé, Mt. Elgon); Reichen. *Vög. deutsch. Ost-Afr.* p. 120, fig. 54 (1894: Lake Naivasha); Neum. *J. f. O.* 1900, p. 201 (Ssubugo, N.W. Masailand).

No. 163. ♀ ad. Nandi, 6500 feet, July 8, 1896. Bill dusky horn-coloured; feet greenish horn-coloured; iris pale brown. Two seen.

Nos. 344, 345. ♂ ♀ ad. Ravine, Aug. 30, 1896.

No. 476. ♂ ad. Ravine, Feb. 21, 1897.

Nos. 691, 692. ♂ ♀ ad. Ravine, July 24, 1897.

No. 762. ♂ juv. Lake Naivasha, Aug. 12, 1897.

[The nesting of *I. pectoralis* at Lake Naivasha is a very interesting circumstance. After comparing Mr Jackson's series of specimens with our own set from South Africa, I find that the same variations in markings run throughout them all. The number of dark bands on the tail varies, apparently, from seven to ten, and, in some instances, the dark bars become obsolete.—R. B. S.]

[To be continued.]

XL.—*On a small Collection of Birds from Tripoli.*

By J. I. S. WHITAKER, F.Z.S., M.B.O.U.

FOR some years past I had entertained the idea of visiting Tripoli and Cyrenaica, or, failing the opportunity of going myself, of sending a collector in my stead, with a view of obtaining some information regarding the Ornis of those hitherto—by the ornithologist at least—practically unexplored countries. Beyond a few notes by sportsmen, or other travellers who have visited the town of Tripoli and its immediate neighbourhood, nothing has, I believe, thus far been published concerning the fauna of this part of North Africa, which, although so near to Europe, seems yet so far off as regards our knowledge of it; the Tripolitan *hinterland* being indeed less known, and far more of a *terra incognita* to us, than many parts of Central Africa.

Owing, however, to the Ottoman Government having of late years prohibited Europeans from penetrating into the interior of the Vilayet, unless provided with special permission, and to the fact of this permission being extremely difficult to obtain, particularly by an Englishman, in consequence of the somewhat strained relations existing between our country and the Porte, I had until last year been obliged to forego my good intentions, and await the issue of events. Finally, in the spring of 1901, thanks to the kind intervention of the British Museum, I succeeded in obtaining, through our Foreign Office, the long wished for permission,

and not being myself able to undertake the journey, I despatched Mr. Edward Dodson on the interesting mission.

Mr. Dodson, accompanied by an assistant taxidermist, Mr. Drake, left London in the early part of March 1901, and after calling *en route* at Malta, reached Tripoli about a fortnight later. Here a stay of ten days was made for the purpose of purchasing the necessary transport animals, and making other preparations for the journey into the interior. From the outset, notwithstanding the Turkish Sultan's passport, difficulties were placed in the way of the travellers by the local authorities, the Vali of Tripoli, among other things, refusing to allow their cartridges to be carried into the country; a fresh permit therefore had to be asked for, and received, from Constantinople, authorizing the introduction of ammunition.

Finally the party, consisting of the two Englishmen, with their Arab retinue, camels and horses, and a small obligatory escort of Turkish soldiers, left Tripoli on the 1st of April.

The following is a brief outline of the inland journey:—

Travelling first in a south-easterly direction, and crossing a belt of shifting sand-dunes, almost destitute of life, the caravan entered a cultivated region inhabited by nomad Arabs, who were most hospitable and kind to the travellers, supplying them with food, and otherwise assisting them. A few birds were collected there, but the species were not many, nor were the individuals numerically plentiful, except as compared with those met with further south. Ascending the Wed-Lipteha, where water was fairly abundant, and crossing the Tarhuna hills, a plateau was reached, covered with Halfa or Esparto grass; in this district numerous important ruins bear evidence of the extent and strength of the Roman occupation.

The aspect of the country now gradually became more barren and stony, finally culminating in absolute desert at Beni-Oulid, which was reached on the 8th of April. A trying time was there in store for our travellers, owing to the great heat caused by the parching desert wind, the so-called

“gebleh,” and to the absence of water, which was only obtainable at places ten to twelve hours march distant from each other. “During the ‘gebleh winds,’” Mr. Dodson wrote, “we had simply to hide in our tents and cover our heads with cloths, as it was often quite impossible to travel through the blinding, drifting sand, which made one’s nose and lips crack and bleed.”

Two weeks after leaving Tripoli, the caravan arrived at Sofedjin, about 120 miles to the south-east of that town, and after a short stay there, continued its march to Bonjem Oasis. Between Sofedjin and Bonjem some trouble was experienced with the Wafella Arabs, an ambush which had been prepared for the Englishmen being fortunately discovered by them in time and the treacherous Arabs discomfited. The country in this neighbourhood was very rocky and barren, but intersected by numerous *oueds*, or dry torrent-beds, in some of which large patches of brilliantly-coloured flowers were to be seen, which on approach proved to be “*immortelles*,” or everlasting flowers. On the road to Bonjem a halt was called at Faskir Zumzum, where an important Roman reservoir exists in a wonderful state of preservation, its stonework and cement being as good and as water-tight as ever. Few birds of any species were to be met with thereabouts, but gazelles (*Gazella dorcas*) appeared to be numerous, judging from their tracks, and one of these animals was shot. At Bonjem, which was reached on the 21st of April, our travellers hoped to find fresh food, but were disappointed, the few inhabitants of the place being themselves on the verge of starvation, and their diet at the time consisting almost solely of Yellow Wagtails (*Motacilla flava*). These birds happened just then to be passing on migration, and considerable numbers of them were trapped and snared by the famished natives. Failing other food, the Arabs of these districts often subsist to a great extent upon snails and palm-juice. In consequence of the hardships endured during the march, and to a want of proper diet, one of the Turkish soldiers died about this time. Apparently the poor man had been suffering previously from an attack of severe gastritis,

and should never have been sent by the authorities on a journey of this sort.

On the 26th of April, after four days of hard and incessant marching through waterless desert, the caravan arrived at Sokna, an oasis and town situated about 350 miles south of Tripoli, with a population of 2000 natives and a Turkish garrison of 200 men. Here a week's halt was made to recruit the exhausted forces of both man and beast after their forced march across the desert. During the stay at Sokna some collecting was done, both of birds and small mammals; but of the former there were but few species, the Desert Sparrow (*Passer simplex*) and the Coronetted Sand-Grouse (*Pterocles coronatus*) being among the most noteworthy.

More dust-storms were experienced about this time, and one night some torrential rains also fell. On the 4th of May, Mursuk having been fixed on as the furthest southern limit of the expedition, the journey was resumed in that direction, and the following day the caravan entered the range of the Djebel Soda, or Black Mountains, as they have appropriately been called, from the colour of the stone of which they are formed. Two days after crossing this range water was met with, and all the water-skins were then filled, and preparations made for another long waterless desert march.

A caravan from the coast was here encountered, which had suffered greatly from the "gebleh" winds and lost one-half of the flocks with which it had started. Gazelles (*Gazella dorcas*) were numerous here, and a nice specimen was added to the collection, as was also a hyæna (*Hyæna striata*).

On the 11th of May a little pasturage was reached, and the camp was pitched for a well-earned rest after the forced march of 15 and 18 hours at a stretch just accomplished; but another terrific storm brought the tents to the ground, and rendered the night miserable. The horses of the caravan too, maddened by hunger and thirst, stampeded during the night, and were never afterwards recovered, although two days were spent in diligently searching for them.

On the 14th of May the small oasis (and village) of Zighen

was reached, and on the 19th the more important town of Sebka, both in the Province of Fezzan. Not far from the latter place a wonderful petrified forest was traversed, its area covering many miles, so many indeed that it took the caravan ten hours of continuous travelling to cross it. The petrified trees, which varied in circumference from seven feet to a few inches, were all lying prone on the ground. A similar forest, although on a much smaller scale, exists near Cairo, and apparently Dr. Sven Hedin met with another in his recent journey through Central Asia. As in some other Saharan regions, marine shells were found here, pointing to the fact of a submarine existence at some remote period.

On the 25th of May, or three weeks after leaving Sokna, the expedition arrived at Mursuk, the capital of Fezzan, and the seat of government of that Province. Mursuk is a large and important town, with its oasis, situated some 300 miles south of Sokna, and about 650 miles south-east of Tripoli.

Here, owing to the Vali of Tripoli having omitted to advise the Mutarharif, or Governor of Mursuk, of the probable arrival of an European expedition travelling under the ægis of the Sultan's *Irade*, the whole party was placed under arrest, and the Turkish escort imprisoned. Fortunately, however, it was possible to clear up the matter to the satisfaction of the local authorities, and the travellers were immediately released.

After a few days spent at Mursuk, the expedition, having attained its southermost limit, retraced its steps as far as Sokna, following, more or less, the same route as on its outward journey. From Sokna, in order to carry out the projected itinerary, Mr. Dodson decided to travel in a north-easterly direction as far as the Gulf of Syrtis, and then, skirting along the coast, to enter Cyrenaica, and follow the bend of the coast-line up to Benghazi.

The districts traversed by the Expedition between Sokna and the coast had hitherto been practically unexplored by Europeans, and Mr. Dodson was able to map out a considerable tract of country and to correct certain glaring errors

in existing charts, compiled probably on second-hand and untrustworthy information. On nearing the coast some trouble was experienced with the Oulid-Sliman Arabs, who are very fanatical, and the whole caravan was under arms while crossing their territory. Fortunately, however, although several times on the verge of hostilities, actual fighting was avoided, and the party succeeded in effecting its journey across the dangerous country in perfect safety, finally reaching Benghazi early in August.

In the foregoing rough sketch of Mr. Dodson's journey, I have alluded merely *en passant* to some of the more remarkable incidents which occurred during it, this not being either the time or place to dwell at length thereon. Apart, however, from being an extremely arduous undertaking, and for desert-travel perhaps a "record," some fifteen hundred miles having been traversed within the comparatively short space of four months or so, the journey seems also to have been replete with interesting experiences, an account of which would probably furnish material sufficient to fill a fair-sized volume.

I append a list of the few species and subspecies of birds, of which specimens were actually obtained during the journey, the total amounting to sixty-two in number.

Of these, as might be expected, a large proportion are desert forms, Larks and Chats preponderating, as usual in collections from Saharan regions. Birds of prey, contrary to what might have been expected, are conspicuous by their absence, as are also members of the Corvine family. Waders, and water-birds generally, are almost entirely unrepresented in the collection. Owing to an unfortunate lack of field-notes, I am able to say but little regarding the species met with, and, in the majority of cases, can merely record the simple *data* of sex, locality, and date from the labels.

Although in many ways highly interesting, especially from a geographical and cartographical point of view, the result of the expedition, ornithologically considered, is somewhat disappointing, or perhaps I should say unexpected, taking

into account the extent of practically unexplored country traversed. It is true that, knowing the desert character of the region, I was, more or less, prepared to find its Ornis by no means varied or rich in species, but I hardly expected to find it so poor as it apparently is, the dearth of birds in some of the districts visited being so great that, according to Mr. Dodson, days often elapsed without a single addition being made to the collection. The absence of new species, or even subspecies, is also rather surprising—in fact, with but two exceptions, the species met with by Mr. Dodson in Tripoli are all to be found in Tunisia and Algeria. Generally speaking, I may here observe that the Ornis of Tripoli tends more to that of Tunisia and Algeria than to that of Egypt.

A small collection of Mammals was made by Mr. Dodson, and these, as shown by Mr. Oldfield Thomas's paper on the subject (Proc. Zool. Soc. 1902, vol. ii. p. 2), compare favourably in the way of novelties with the birds collected, most of them in fact proving to be of new species or subspecies.

In conclusion, I can but repeat what I wrote when referring to the result of my Maroccan expedition (Ibis, 1898, p. 595), namely, that great credit is due to Mr. Dodson for the energy and perseverance displayed by him in overcoming the many difficulties which beset the European traveller in fanatical and little-explored countries, difficulties which, in the case of the recent expedition to the Tripoli *hinterland*, were sufficiently great to have deterred many a traveller from prosecuting his journey and bringing it to a successful issue.

List of the Birds met with.

1. SAXICOLA CENANTHE (Linn.).

3 ♂ and 3 ♀, from Tarhuna, Wed-Dinner, Wed-Zumzum, Bonjem, and El-Hamman, between April 4th and 26th.

2. SAXICOLA AURITA (Temm.).

1 ♂ juv., from Wed-Dinner, April 7th.

3. *SAXICOLA STAPAZINA* Vieill.

1 ♂, from Wed-Nefed, April 13th.

4. *SAXICOLA MELANOLEUCA* (Güld.).

2 ♂, from Okerrer-Tarhuna, April 6th.

5. *SAXICOLA DESERTI* Rüpp.

A large series, ♂, ♀, and juv., from various districts in Tripoli and Cyrenaica, in April, May, June, and July.

6. *SAXICOLA MÆSTA* Licht.

A large series, ♂, ♀, and juv., from various districts in Eastern Tripoli and Cyrenaica, in June and July.

7. *SAXICOLA HALOPHILA* Trist.

5 ♂ and 2 ♀, from Wed-Agarib and Wed-Domaran, in June and July.

8. *SAXICOLA LEUCOPYGA* C. L. Brehm.

A large series, ♂ and ♀, from various districts in Tripoli, in April, May, June, and July.

In the series are examples in different stages of plumage, some with perfectly white crowns, others with perfectly black crowns, and others, again, in the transition state. A note of Mr. Dodson's says: "This bird has a pleasant song, something like that of the Skylark. It sings mostly when perched on the top of a bush. I never observed those with the white crown singing."

9. *SAXICOLA LEUCURA* (Gm.).

2 ♂, from Tarhuna and Wed-Nefed, in April.

Respecting this species, Mr. Dodson says: "Found everywhere in the north in rough stony cliffs. Breeding, and has already reared first broods. Does not occur south of the Tarhuna hills."

10. *PRATINCOLA RUBETRA* (Linn.).

6 ♂ and 3 ♀, from Tarhuna, Wed-Dinner, Bonjem, Oum-el-Abid, and El Hamman, in April, and as late as the 18th of May, when the birds were presumably breeding.

11. *RUTICILLA PHÆNICURUS* (Linn.).

1 ♂, from Okerrer-Tarhuna, April 6th.

12. *DAULIAS LUSCINIA* (Linn.).

1 ♀, from Okerrer-Tarhuna, April 6th.

13. *SYLVIA RUF A* (Bodd.).

Several specimens, ♂ and ♀, from various districts, in April, May, and the end of July.

14. *SYLVIA SUBALPINA* Bonelli.

3 ♀, from Tarhuna, Attieh, and Kaibe, in April, May, and the end of July.

15. *SYLVIA MELANOCEPHALA* (Gm.).

1 ♂, from Alouna Curerwa, April 3rd.

16. *SYLVIA ORPHEA* Temm.

2 ♂, from Beni-Oulid, April 8th.

17. *SYLVIA SALICARIA* (Linn.).

A few specimens, ♂ and ♀, from El Hamman and Zeigen, in April and May.

18. *SYLVIA DESERTI* (Loche).

Two specimens, unsexed, from Oumsinerma, July 10th.

Respecting this species, which is undoubtedly a good one, being very distinct in colouring as compared with *Sylvia nana* Hemp. & Ehr., Mr. Dodson says that he only met with it on one occasion, when he came across a small party of five birds, out of which he secured the two examples in the collection. It is evidently more or less rare in Tripoli, as it is in Tunisia and Algeria, its range being confined to certain districts which are suited to its requirements.

The two above-mentioned examples are extremely pale in colouring, even for *S. deserti*.

19. *PHYLLOSCOPUS TROCHILUS* (Linn.).

1 ♂, from Ziegen, May 16th.

20. *PHYLLOSCOPUS SIBILATRIX* (Bechst.).

Five examples, ♂ and ♀, from Beni-Oulid, Ziegen, Getefa, and Oum-el-Abid, in April and May.

21. *HYPOLAIS ICTERINA* (Vieill.).

Three examples, ♂ and ♀, from Sinezarat, Ziegen, and Sebka, in April and May.

22. *AËDON GALACTODES* (Temm.).

1 ♂ from Tarhuna, April 4th.

23. *ACROCEPHALUS PHRAGMITIS* (Bechst.).

1 ♂ and 1 ♀, from Ziegen, May 15th.

24. *SCOTOCERCA SAHARÆ* (Loche).

A good series, ♂ and ♀, from various districts both in Tripoli and Cyrenaica, in April, July, and August.

25. *ARGYA FULVA* (Desf.).

A small series, ♂, ♀, and young, from various districts in Tripoli, in April, May, and June.

26. *MOTACILLA FLAVA* Linn.

6 ♂, from Okerrer-Tarhuna, Wed-Nefed, Bonjem, El Hamman, and Oum-el-Abid, in April and May.

Mr. Dodson says that this species was often observed in large flocks and at a considerable distance from water.

27. *ANTHUS TRIVIALIS* (Linn.).

2 ♂ and 1 ♀, from Okerrer-Tarhuna and Beni-Oulid, in April.

28. *ANTHUS CAMPESTRIS* (Linn.).

2 ♂, from Alouna-Curerwa, in April.

29. *ORIOLOUS GALBULA* Linn.

1 ♂, from Bonjem, April 22nd.

30. *LANIUS POMERANUS* Sparrm.

2 ♂ and 1 ♀, from Tarhuna, Oum-el-Abid, and Buzzra, in April and May.

31. *LANIUS ELEGANS* (Swains.).

A fair series, ♂, ♀, and young, from various districts in Tripoli and Cyrenaica, in April and July.

Mr. Dodson says:—"Grey Shrikes were observed in most of the dry *oueds*, where thorny bushes occurred."

The specimens in this collection appear to be identical with those from Southern Tunisia and Southern Algeria.

32. *MUSCICAPA GRISOLA* Linn.

2 ♂ and 1 ♀, from Wed-Nefed, Oum-el-Abid, and El Hamman, in April and May.

33. *MUSCICAPA COLLARIS* Bechst.

3 ♂ and 2 ♀, from Tarhuna, Beni-Oulid, Wed-Dinner, and Oum-el-Abid, in April and May.

34. *HIRUNDO RUSTICA* Linn.

2 ♂, from Bonjem and Sidi-Faradje, in April and August.

35. *COTILE RIPARIA* (Linn.).

2 ♂, from Bonjem and Ziegen, in April and May.

Mr. Dodson says the specimen obtained at Ziegen was shot resting on the desert sands, quite exhausted.

36. *COTILE OBSOLETA* Cab.

1 ♂, from Sebka, June 4th.

Of this species Mr. Dodson says that it is rare, keeping exclusively within the town limits.

37. *PASSER SALICICOLA* Vieill.

1 ♂, from Jackna, April 2nd.

38. *PASSER SIMPLEX* (Licht.).

A good series, ♂ and ♀, from El Hamman, Getefa, and Ghodna, in April and May.

Regarding the Desert-Sparrow, Mr. Dodson says that he did not observe any specimen outside of the Province of Fezzan. Those he met with were living in date-palms, and appeared to be breeding. In the British Museum there are two examples of this Sparrow, from the Gould Collection, labelled as having been obtained in Fezzan, one of them, indeed, being from Mursuk, the capital of that Province.

39. *EMBERIZA MILIARIA* Linn.

1 ♀, from Alouna Curerwa, April 3rd.

40. *ALÆMON ALAUDIPES* (Desf.).

A large series, ♂, ♀, and young, from various districts, in May, June, and July.

41. *GALERIDA CRISTATA MACRORHYNCHA* (Trist.).

1 ♂, from Jackna, April 2nd.

42. *GALERIDA THEKLÆ SUPERFLUA* Hart.

2 ♂, from Wed-Dinner and Wed-Chegga, in April and July.

43. *GALERIDA THEKLÆ DEICHLERI* Erlang.

Several examples, ♂ and ♀, from Buzzra, Wed-Agarib, Wed-Aggar, and Wed-Meheyra, in April, June, and July.

44. *GALERIDA THEKLÆ CYRENAICÆ*, nov. subsp.

Four examples, ♂ and ♀, from Bir-Tabilleh, Bisher, and Sidi-Sweya, in August.

These Crested Larks resemble other members of the *Galerida theklæ* group, except in their plumage-colouring, which is light mealy grey, similar to that of pale specimens of *G. t. magna* (Hume). The following are their measurements:—

♂ ad. Tot. length 6 inches, wing 3·90, culm. ·50, tars. ·90.

♀ ad. „ 5·75 „ „ 3·70, „ ·50, „ ·85.

Mr. Dodson says that he met with these Larks only in Cyrenaica, and not further west.

45. *AMMOMANES ALGERIENSIS* Sharpe.

A large series, ♂ and ♀, from various districts, in April, June, and July.

46. *AMMOMANES PHÆNICUROIDES* Horsf. & Moore.

A large series, ♂ and ♀, from the Djebel Soda range, some obtained on the outward journey in May and others on the return journey in June.

I have referred these Larks to *A. phænicuroides*, as they seem to be identical with that species in their plumage-colouring and also in their measurements generally, although the Tripoli birds are perhaps slightly larger, particularly in the culmen.

Mr. Dodson says that he only found these Larks in the Soda Mountains, and nowhere else in the course of his journey. He writes regarding the species as follows:—“The range of these birds seems to be confined exclusively to the Soda range; they are only to be seen in the morning and afternoon, and during the heat of the day rest under the shade of the black boulders which everywhere abound. It is probably the absence of shade that limits their range. Unlike *A. algeriensis*, I have never seen these birds taking long flights.”

47. *AMMOMANES CINCTURA* (Gould).

A good series, ♂ and ♀, some obtained at Sofedjin, Sinerat, and Buzzra in April, and others obtained at Oumsinerma and Wed-Aggar in July.

Writing of these little Desert-Larks in July, Mr. Dodson says:—“They are all in flocks now, frequently combining with the Horned Larks (*O. bilopha*).”

48. *CALANDRELLA BRACHYDACTYLA* (Leisl.).

A large series, ♂, ♀, and young, from Wed-Nefed, Buzzra, and Oumsinerma, in April and July.

Mr. Dodson says that he met with the Short-toed Lark in immense flocks in July.

49. *CALANDRELLA MINOR* (Cab.).

Two examples, ♂ and ♀, from Tarhuna and Wed-Nefed, in April.

50. *RHAMPHOCORYS CLOT-BEY* (Bp.).

Seven examples, ♂ and ♀, from Sofedjin, Wed-Nefed, and Buzzra in April, and from Oumsinerma and Wed-Aggar in July.

Mr. Dodson says that these Larks were abundant at Sofedjin.

51. *OTOCORYS BILOPHA* (Rüpp.).

A large series, ♂, ♀, and young, from Sofedjin and Buzzra in April, and from Oumsinerma, Wed-Wagis, and Zimherbuk in July.

Mr. Dodson says that these Shore-Larks were to be seen in small parties in the spring and in large flocks later. He adds that they have a peculiar habit of flying in curves when ascending, uttering a short sharp note while doing so, and then a more prolonged note when descending.

52. *CAPRIMULGUS EUROPEUS* Linn.

Two examples, ♂ and ♀, from Wed-Domaran, April 15th, and Desert of Dufer, April 17th.

53. *UPUPE EPOPS* Linn.

A ♀ from El Hamman, April 26th.

54. *ATHENE GLAUX* (Savigny).

Two examples, ♂ and ♀, from Tarhuna and Ghodna, in April and May.

55. *FALCO VESPERTINUS* Linn.

1 ♂, from Bonjem, April 21st.

56. *FALCO CENCHRIS* Naum.

1 ♂, from Bonjem, April 21st.

57. *TURTUR COMMUNIS* Selby.

Four examples, ♂ and ♀, from Ziegen and Ghodna, in May.

58. *PTEROCLES CORONATUS* Licht.

A large series, ♂ and ♀, from El Hamman in April, and from Ain Hamman in June.

59. *PTEROCLURUS SENEGALUS* (Linn.).

A large series, ♂, ♀, and young, from Oumsinerna, in July.

Mr. Dodson says of this Sand-Grouse:—"When nesting the male bird flies to water and brings it to his mate; both parents give their young drink until the latter are three-parts grown, and then all join the immense flocks."

60. *COTURNIX COMMUNIS* Bonnat.

1 ♀, from Wed-Nefed, in April.

61. *CURSORIUS GALLICUS* (Gmel.).

Six examples, ♂ and ♀, from Wed-Chegga, Zimherbuk, and Buscheifa, in July and August.

Mr. Dodson says that these birds are very noisy when flying, but absolutely silent when on the ground.

62. *ÆGIALITIS CANTIANA* (Lath.).

1 ♀, from Oumsinerna, in July.

XLI.—On a new Pheasant from Japan.

By H. E. DRESSER.

PROFESSOR IJIMA of Tokio, Japan, has recently forwarded to me a Pheasant, and has asked me to describe it if, as he believes, it is a new and undescribed bird. This I have much pleasure in doing, and in naming it *Phasianus ijimæ*. It is most nearly allied to *Phasianus scemmerringi*, but differs in having the lower back and rump white, only the concealed

bases of the feathers being dark, and the rest pure white; the dark feathers on the upper parts lack the golden-yellow margins, and have narrow purplish-black edges; the under-parts are as in *P. sœmmerringi*, but more rufous in tint and less marked with black. Culmen 1·4, wing 8·7, tail 29·0, tarsus 2·4 inches. The specimen described is an adult male from the Province of Hiuga, in the south-east corner of the island of Kiu-siu, and is an easily separable insular form.

Professor Ijima informs me that he has examined another male in the Science College Museum which is similar to the one above described, and that Mr. K. Ogura, who has spent several years in Kiu-siu, informs him that the white-rumped form inhabits not only the Province of Hiuga, but also the neighbouring one of Osumi. A female, also from Hiuga, in the possession of Mr. Y. Tanaka, resembles the female of *P. scintillans*, but has the upper parts darker and the middle tail-feathers uniformly coloured and without transverse markings.

XLII.—Notices of recent Ornithological Publications.

[Continued from p. 520.]

101. *Aplin on the Birds of Bardsey Island.*

[The Birds of Bardsey Island, with additional Notes on the Birds of Lley. By O. V. Aplin. Zoologist, 1902, pp. 8-17, 107-110.]

The author continues his observations on the birds of the above-mentioned district (see above, p. 144). The account of Bardsey is most interesting; but to the ornithologist the nesting of the Red-backed Shrike and the occurrence of the Turtle-Dove in Lley are possibly more important. The Lesser Whitethroat and Ray's Wagtail are now deleted from the list of birds of the area.

102. *Arrigoni Degli Oddi's 'Atlante Ornitologico.'*

[Atlante Ornitologico. Uccelli Europei, con Notizie d' Suole Generale e Particolore del Dr. E. Arrigoni Degli Oddi. Con 30 tavole colorate e 210 disegni intercalati nel testo. Milano, 1892. Pp. 560.]

This new book on the birds of Europe, illustrated by

coloured plates and many useful figures in the text, and sold at a moderate price, may well help to popularize ornithology, especially among those in whose language it is written. In the first part (166 pp.) much preliminary matter is contained. The structure, distribution, migration, classification, and various points in the history of bird-life are discussed at some length; while a useful bibliography, containing the titles of the principal publications on the birds of Europe and its several countries, is added. The second part (566 pp.) contains a regular account of European birds, arranged systematically, beginning with the Accipitres and Picariæ and ending with the Anseres. The author admits 565 species into the European list. He is sparing in his recognition of subspecies, and denotes them by alphabetical signs (*a*, *b*, *c*, &c.) only. The scientific and Italian names adopted are alone given, without synonymy. Tautonyms are used in every possible case. The 50 coloured plates are reproductions from Arnold's '*Vögel Europas*' (Stuttgart, 1897).

103. '*The Avicultural Magazine*.'

[The Avicultural Magazine; being the Journal of the Avicultural Society for the Study of British and Foreign Birds. Vol. vii. (1901) and vol. viii. nos. 1-8 (1901-2). London: Porter.]

We are much pleased to have received a copy of the recent numbers of the '*Avicultural Magazine*.' Aviculturists and ornithologists are so nearly akin that they ought to fraternize; and many names well known in ornithology will be found mentioned in the columns of the '*Avicultural Magazine*.'

The birds treated of by our contemporary are, of course, those that are, or may be, kept in captivity; but among these are many of considerable scientific interest. Mr. Reginald Phillips keeps a pair of young Bee-eaters in his dining-room, and tells us many curious stories about them. The Hon. Canon Dutton writes about the "*August Amazon*" (*Chrysotis augusta*) of Dominica, and illustrates the article with a beautiful coloured plate, drawn by Mr. Herbert Goodchild. Mr. Dutton, as is well known, is one of our best

authorities on captive Parrots. Mr. W. G. Percival has reared Ringed Plovers from eggs hatched in an incubator, and relates his experiences. Mr. Frank Finn, F.Z.S., the well-known ornithologist of Calcutta, writes on Indian birds, Mr. Johnstone on the Nanday Conure, and the Rev. Hubert D. Astley on Pittas in captivity. Since November of last year Mr. D. Seth-Smith has been the Editor of this Magazine, which well deserves the support of all persons interested in cage-birds.

104. *Backhouse on the Bird-collection of the Yorkshire Philosophical Society.*

[Preliminary Catalogue of the British Bird Collections in the Possession of the Yorkshire Philosophical Society. By the Hon. Curator, James Backhouse. Part III. Ann. Rep. Yorks. Phil. Soc. 1901, pp. 33-62.]

This part of the Catalogue begins with Accipitres, taken in the widest sense to include Striges, and passes on to Steganopodes, Herodii, Anseres, Columbæ, Gallinæ, Grallæ, Limicolæ, Gaviæ, Tubinares, Alcæ, and Pygopodes. The proofs do not seem to have been very carefully corrected, as there are several serious misprints; while such items as eggs of the Gannet from the Farne Islands, and one of the Ruddy Sheld-Drake from Iceland, must have been entered by misadvertence.

105. *Bangs on new Birds from San Miguel Island, Panama.*

[Two new Birds from San Miguel Island, Bay of Panama. By Outram Bangs. Proc. N. England Zool. Club, iii. pp. 71-73.]

Mr. Bangs has now decided that it is necessary to separate the Ant-Wren and Vireo of San Miguel Island in the Bay of Panama—which he had previously referred to continental forms—as distinct species, under the titles of *Formicivora alticincta* and *Vireo insulanus*.

106. *Bangs on new Birds from Colombia.*

[Descriptions of Ten new Birds from the Santa Marta Region of Colombia. By Outram Bangs. Proc. N. England Zool. Club, iii. pp. 81-90.]

A re-examination of some of the specimens collected by

Mr. Brown in the district of Santa Marta, Northern Colombia (see *Ibis*, 1899, p. 541, & 1900, p. 547), has led Mr. Bangs to separate ten more forms as new species or subspecies, which are described in this paper. The new species characterized are *Xenicopsis anxius*, *Premnoplex coloratus*, *Microcerculus corrasus*, and *Catamenia alpica*. The remainder are subspecies.

107. *Barboza du Bocage on Birds from the Cape Verde Islands.*

[Aves e Reptis de Cabo Verde. Por J. V. Barboza du Bocage. *Jorn. Sci. Math., Phys. e Nat. Lisboa*, (2) vi. pp. 206-210.]

The author writes on a small collection of birds and reptiles made in several islands of the Cape Verde group, for the Lisbon Museum, by Mr. F. Newton, and enumerates twelve species of the former. Five of these are additions to the known avifauna of this archipelago.

108. *Bianchi on Birds from Abyssinia.*

[Fundorte der Vögel, die durch die Herren N. A. Dmitriew und A. W. Kachowski in den Jahren 1898-99 in Nordwest-Afrika gesammelt wurden. V. Bianchi. *Annuaire Mus. Zool. Acad. Imp. d. Sci., St. Pétersb.* vi. pp. 425-434.]

This is a list of the birds obtained by Messrs. Dmitriew and Kachowski during their recent journey in Abyssinia and the adjoining districts of Somaliland, and presented to the Zoological Museum of St. Petersburg. The names are taken from the first volume of Shelley's 'Birds of Africa,' and the localities of the specimens are added, but no other notes. The exact route of the collectors and the date of their halt at each station are also given.

109. '*Cassinia*.'

[*Cassinia*, a Bird-Annual. Proceedings of the Delaware Valley Ornithological Club of Philadelphia, 1901, No. v.]

'*Cassinia*' is the appropriate name of the new annual journal of the Delaware Valley Ornithological Club—after Mr. John Cassin, of Philadelphia, the first naturalist of the

United States who turned his attention to birds other than those of North America. It is prefaced by a well-written sketch of Cassin's life and work (prepared by Mr. Witmer Stone) and gives a portrait of that excellent ornithologist, whose personal acquaintance Sclater had the pleasure of making when he visited Philadelphia in 1856! The papers included are entirely of local interest.

110. *Dubois' 'Synopsis Avium.'*

[Synopsis Avium. Nouveau Manuel d'Ornithologie par Alphonse Dubois. Fasc. IX., X. Royal 8vo. Brussels, 1901-2. 6 francs per livraison.]

In these two parts of the 'Synopsis Avium' (see Ibis, 1902, p. 338) the enumeration of the Oscinine series is continued to its end, and the few Pseudoscines conclude the volume, which contains altogether 729 pages. The species recognised in it are 9417 in number. The Introduction, Titlepage, and Contents of the first volume of the 'Synopsis' are contained in the tenth livraison.

Dr. Dubois has adopted Sundevall's division of the Class Aves into "Gymnopædes" and "Ptilopædes." The first of these sections is now concluded; the Ptilopædes will be treated of in the second volume.

111. *Finsch on the Zosteropidæ.*

[Das Tierreich. Lieferung 15. Zosteropidæ, bearbeitet von Dr. Otto Finsch. 56 pp. Berlin: Friedländer, 1901.]

By some mischance the 15th Lieferung of 'Das Tierreich,' containing Dr. Finsch's synopsis of the Zosteropidæ, which is dated March 1901, has only lately come to our notice. It was quite appropriate that this group of birds should be worked up in the Leyden Museum, which contains an excellent, if not unrivalled, series of Zosteropine forms.

After an account of the literature of the subject, and two pages of general introduction, Dr. Finsch proceeds to consider the family, and wisely decides to allow only three valid genera—*Zosterops*, *Pseudozosterops*, and *Lophozosterops*. To typical *Zosterops* the author assigns no less than 138 species,

which are divided into some 20 sections. *Pseudozosterops* comprises only 3 species, from the Sunda Islands, and *Lophozosterops* only 2, from the same part of the world.

The Zosteropidæ are spread over the greater part of the tropical portion of the Old World, extending from Senegambia to the Fijis, and from Japan (*Z. japonica*) and Amoorland (*Z. erythropleura*) on the north to Tasmania and New Zealand on the south. Dr. Finsch considers them to be a family of nine-primaried Oscines allied to the Dicæidæ and Mniotiltidæ.

112. *Hellmayr on two new Brazilian Birds.*

[Beschreibung von zwei neuen brasilianischen Vögeln. Von C. E. Hellmayr. Verhandl. k.-k. zool.-bot. Ges. Wien, 1902, pp. 95-98.]

Attila nattereri and *Rhamphocænus sticturus*, both from Matto Grosso (*Natterer*), are described as new.

113. *Hellmayr on a new Thryophilus.*

[Noch einige Worte über *Thryophilus*. Von C. E. Hellmayr. Verhandl. k.-k. zool.-bot. Ges. Wien, 1902, pp. 169-170.]

The author describes *Thryophilus baroni* from Northern Peru as a new species.

114. *Hinde on the Game-birds of Masailand.*

[The Last of the Masai. By S. L. Hinde and Hildegard Hinde. 1 vol., pp. 180. London, 1901.]

Mr. Hinde and his wife have put together a well-written and excellently illustrated account of the Masai of British East Africa, among whom the former has been "Resident and Collector" for several years. The Masai have now "fallen from their high estate" and are rapidly dwindling in numbers, so that Mr. and Mrs. Hinde have done a good deed in recording, before it was too late, their most extraordinary habits and customs. Mr. Hinde also gives us "Field-Notes on the Game of East Africa," which are mostly concerned with mammals; but a few pages are devoted to the Pigeons, Water-Ibises, Bustards, Francolins, Guinea-fowl, and other "game-birds" of Masailand; while the following passage on the recent change of habits in the Oxpecker (*Buphaga erythrorhyncha*) is worthy of notice:—

“ One of the most remarkable instances of the change of habits in wild birds is shown in the case of the common Rhinoceros-bird, which formerly fed on ticks and the other parasites infesting game and domestic animals. It was not infrequent for an animal suffering from a sore to be so badly probed by these birds that it died as a result. Since the cattle-plague destroyed the immense herds in Ukambani and nearly all the sheep and goats were consumed during the famine, the Rhinoceros-bird, deprived of its former food, has become carnivorous, and at the present time any animal not constantly watched is liable to be killed by it. Perfectly healthy animals have their ears eaten down to the bone, and holes torn in their backs and in the femoral regions.”

115. *Le Souëf's Visit to the Furneaux Islands.*

[A Visit to the Furneaux Group of Islands. By D. Le Souëf, C.M.Z.S. Vict. Nat. xviii. pp. 181-188.]

Mr. D. Le Souëf, who, we are informed, has now succeeded his father in the Secretaryship of the Zoological Gardens at Melbourne, has given the field-naturalists of Victoria an interesting description of his visit to the Furneaux group of islands in Bass' Straits. Here is the well-known home of the Mutton-bird (*Puffinus tenuirostris*), besides “rookeries” of the Gannet (*Sula serrator*) and White-breasted Cormorant (*Phalacrocorax gouldi*), with nesting-grounds of many other birds. A list of 54 species “seen and identified” is given.

116. *Loring on Birds from Alaska.*

[Notes on Mammals and Birds observed in Southern Alaska in 1901. By J. Alden Loring. Sixth Ann. Rep. New York Zool. Soc. 1902, p. 145.]

Mr. Loring's journey to Alaska in 1901 was undertaken in order to provide living animals for the Zoological Society's Park at New York, to which he is attached as “Field-Agent.” But at his principal station at Cook Inlet, on the southern coast of Alaska, and elsewhere he managed to make observations on certain mammals and birds that he met with, which are recorded in this paper. The birds noticed

and for the most part thoroughly identified were 46 in number, of well-known species, 15 being Passeres.

117. *Madarász on Birds from the Solomon Islands.*

[Beiträge zur Ornithologie der Salomon-Inseln, mit der Beschreibung von drei neuen Arten. Von Dr. Julius v. Madarász. Természeti Füzetek, xxv. pp. 350-351, tab. xvii.]

A small collection made by Graf Rudolf Festetich on the east coast of Bougainville Island and presented to the Hungarian National Museum is described, the birds being referred to 9 species, three of which are said to be new—*Cyclopsittacus festetichi*, *C. purpuratus*, and *Megaloprepia salomonis*. *C. purpuratus* is figured.

118. *Mellersh on the Birds of Gloucestershire.*

[A Treatise on the Birds of Gloucestershire, with a reference list of all the species known to have appeared in the County. By W. L. Mellersh. Roy. 8vo. Gloucester & London, 1902. Pp. i-viii & 1-112. Price 5s. net.]

This book, which we have read with great pleasure and profit, does not profess to furnish a complete account of the birds of the county, nor to discuss the details of their occurrence in regular sequence; but it aims at informing the reader, firstly, of the different areas into which Gloucestershire may be divided, and, secondly, of the effects which may be produced by the varying nature of the country upon birds and their habits. Four such areas are proposed: the rocky, poor, north-western portion, with the pastures surrounding it; the well-watered Severn Valley; the broad pastures of "the Vale," from Evesham to Bristol; and the elevated downs of the Cotswolds, with their scattered woods. The habitual residents in each of these, the migratory and introduced species, and the stragglers are all carefully considered. The protection of the rarer forms is discussed, while a glossary of local names, a bibliography, and a reference list are added, with a map and six plates.

Gloucestershire is rich in birds, and of some 400 species allowed to be British can lay claim to 270. Of these, the Ring-Ousel, Crossbill, Starling, Kite, Buzzard, Pheasant,

Stone-Curlew, and Sheld-Drake are the most interesting; while the subject of Duck Decoys is hardly less so.

119. *Millais on Surface-feeding Ducks.*

[The Natural History of British Surface-feeding Ducks. With 6 photogravures, 41 coloured plates, and 25 other illustrations. By J. G. Millais, F.Z.S. Longmans; folio, 1902. Price £6 6s. net.]

The Ducks, as many of us know, are a favourite group with the author of this handsome volume. Mr. Millais, as he tells us, has been engaged in the study of Ducks for the past twenty years. As he is thoroughly conversant not only with the bodily structure and the various plumages of his specimens, but also with the habits and manners of the living birds, and has, moreover, the advantage of being an artist of no mean order, we should expect good results from his labours, and are not, we think, disappointed.

But a small portion, however, of his great subject is comprised in the present volume, which treats only of some of the "Surface-feeding" Ducks. It relates, in fact, to ten species, namely, the Mallard, the Gadwall, two Wigeons, the Shoveler, the Garganey, three Teals, and the Pintail. All these birds are most elaborately discussed and described, and the changes of plumage undergone by them in both sexes and at all stages are clearly pointed out and illustrated in a long series of figures. Their poses and attitudes in life are mostly shown by figures in uncoloured plates and others introduced in the text, which, we must confess, please us more than the photographic gravures intended to shew the changes of plumage. At the same time we agree that the latter are well planned to prove the results obtained by diligent study of this difficult part of the subject. The large plates taken by the facile pencils of the author and Mr. Thorburn, and printed in colours by the three-colour process, are likewise extremely effective, although Mr. Millais allows that this process has not yet been brought to perfection.

We need hardly say that besides the changes of plumage, to which special attention is paid, every other part of the life-history of these ten favoured Ducks is amply described

in this fascinating volume, which should be found in the library of every naturalist.

Mr. Millais, we may remark in conclusion, is of opinion that there are really no structural differences sufficient to separate the genera *Mareca*, *Dafila*, and *Chaulelasmus* from the Mallard, and that these so-called genera should be re-united to the genus *Anas*. In this view we are inclined to agree with him.

120. *Milligan on Birds from Western Australia.*

[Report on the Kimberley Exploring Expedition. Appendix F. Birds. By A. W. Milligan. May 1902.]

Mr. A. W. Milligan, Honorary Consulting Ornithologist of the Western Australian Museum, Perth, reports on the birds collected by the Kimberley Exploring Expedition. They were 43 in number and are referred to 19 species, 11 of which are new to the Perth Museum. Amongst them are three examples of a new Grass-Wren, proposed to be named *Amytis housii*, after Dr. F. M. House, the Naturalist of the expedition.

121. *North on the Insectivorous Birds of New South Wales.*

[A List of the Insectivorous Birds of New South Wales. By Alfred J. North, C.M.Z.S. Agric. Gazette of New South Wales, vols. xi., xii., xiii., 1900-1902.]

The 'Agricultural Gazette' of New South Wales is issuing a series of articles upon the Insectivorous Birds of that Colony, prepared by Mr. A. J. North, the Ornithologist of the Australian Museum, than whom there can be no better authority on such a subject. They will serve well to afford a better knowledge of these useful birds to the agriculturist. Coloured illustrations of some of the species are given.

122. *North on Nests and Eggs of Australian Birds.*

[Nests and Eggs of Birds found Breeding in Australia and Tasmania. By A. J. North. Part II. Sydney, April 1902.]

The second part of this valuable work (see *Ibis*, 1902, p. 156) has now reached us. It continues the account of the nests and eggs of the Bower-birds—one of the most

peculiar and attractive families of the Australian ornithology; and then proceeds to the Orioles, Drongos, Shrike-Thrushes (*Collyriocincla*), and Campophagidæ. Besides the coloured plates of eggs, neat text-figures of the nests are also often given, and the letterpress is full of interesting particulars.

123. Oates's 'Catalogue of Eggs.'

[Catalogue of the Collection of Birds' Eggs in the British Museum (Natural History). Vol. II. Carinatae (Charadriiformes—Strigiformes). By Eugene W. Oates. London, 1902. Pp. 400, pls. 15. Price 30s.]

The second volume of Mr. Oates's 'Catalogue of Eggs' has been carried out on exactly the same lines as the first, the system employed in which we have already described (see *Ibis*, 1901, p. 731). It contains a list of the eggs of the species of Waders, Herons, Ducks, Pelicans, Hawks, and Owls represented in the National Collection—that is, of the ten Orders from Charadriiformes to Strigiformes inclusive, according to the arrangement of the 'Hand-list,' the system and nomenclature of which are strictly adhered to. Altogether 14,998 specimens of eggs are catalogued in this volume and referred to 726 species. The Crowley Bequest, which has been received since the first volume of the Catalogue was issued, has added very largely to the series and has supplied a great number of desiderata, especially as regards Australian species.

An Appendix of 36 pp. records many additions and corrections to the first volume. We are informed by it that the egg hitherto referred to *Anarhynchus frontalis* (figured as such by Mr. Harting, P. Z. S., 1874, pl. lx.) does not belong to that species, but probably to *Thinocorys novæ-zeelandiæ**. The true egg of *Anarhynchus* is now described from specimens in the Crowley Collection obtained by Mr. Potts.

We heartily congratulate Mr. Oates on the excellent and methodical character of his work. We suppose that at least two more volumes will be required for the Passeres. When

[We should prefer to reserve our opinion on this subject, having always understood that Mr. Harting's egg, one of three taken by Mr. J. R. Cook, a most careful observer, was unimpeachable. Sir W. Buller's description appears to be from Mr. Potts.—EDD.]

these have been completed, a general treatise on the Oology of Birds might well be based upon this great mass of material.

124. *Oberholser on Humming-birds from Ecuador and Colombia.*

[Catalogue of a Collection of Humming-birds from Ecuador and Colombia. By Harry C. Oberholser. Proc. U.S. Nat. Mus. xxiv. pp. 309-342, 1902.]

In this journal (Ibis, 1901, pp. 300, 458, 699; 1902, pp. 59, 207) we recently published an account of the very remarkable collection of birds made by Messrs. Claud Hamilton and Walter Goodfellow during their journey through Colombia and Ecuador in 1898 and 1899. The Humming-birds were not included in Mr. Goodfellow's memoir, because the whole of the specimens of that family of birds had been parted with to the United States National Museum. With the possible exception of that of Baron (see Nov. Zool. vol. i. p. 43), Messrs. Hamilton and Goodfellow's series of these birds "is probably the finest single collection ever made, comprising as it does 1136 specimens, almost all in fine condition and accompanied by proper data." Mr. Oberholser, to whom their examination has been entrusted, refers them to 109 species and subspecies.

The author follows the arrangement of Mr. Hartert in the 'Tierreich,' and gives many useful remarks besides the collectors' notes. He describes as new:—*Topaza pella pamprepta*, from the Rio Napo; *Boissonneaua flavescens tinochlora*, from West Ecuador; *Helianthus exortis soderstromi*, from Corazon, Ecuador; and *Zodalia thaumasta*, from Chillo, Ecuador. Besides these, other species represented in the collection are rare and of much interest.

125. *Palmer on Legislation for Birds in the United States.*

[Legislation for the Protection of Birds other than Game-Birds. By T. S. Palmer. Bull. U.S. Dept. Agric., Div. of Biol. Surv., No. 12, Revised Edition, 1902.]

Mr. Palmer tells us that at least twelve States of the Union have passed new laws for the protection of birds since 1900, while others have amended, re-enacted, or codified their

statutes, until there are but few exceptions to the rule. The author has recast the part of his work on the use of birds for millinery purposes, and has subjoined a chapter on the possession and sale of birds. Material additions have been made in other portions of the pamphlet, and a table is given of the dates of the laws, together with new diagrams and other improvements. The Federal Laws, the several State Laws, and those of Canada are given in full (see *Ibis*, 1901, p. 140).

126. *Richmond on new Generic Terms for Birds.*

[List of Generic Terms proposed for Birds during the Years 1890 to 1900, inclusive, to which are added names omitted by Waterhouse in his 'Index Generum Avium.' By Charles W. Richmond. *Proc. U.S. Nat. Mus.* xiv. pp. 663-729, 1902.]

Mr. Waterhouse's excellent 'Index Generum Avium' provides a most useful list of the generic names proposed in the Class of Birds from the time of Linnæus to the middle of 1889. Mr. Richmond supplements this work by giving us a list of the generic names proposed since that date up to the end of 1900, and at the same time by adding certain names omitted in the former list. The newly instituted names are 475 in number, and those overlooked by Mr. Waterhouse are 200, so that altogether 675 are enumerated in the present work. In Mr. Richmond's List, not only is an exact reference given to the volume in which each name was published, but the typical species is designated, while the family to which the genus is referable and an explanation of the term employed are also added; so that the paper is most useful and complete, and will be of great value to working ornithologists.

The List ends with a catalogue of the generic terms contained in it, arranged under the heads of the families to which they belong.

127. *Seth-Smith on Parrakeets.*

[Parrakeets; being a practical Handbook to those Species kept in Captivity. By D. Seth-Smith, F.Z.S., M.B.O.U. Part I. Pp. 1-40; 4 coloured plates. Royal 8vo. London: R. H. Porter. Price 6s. net.]

Mr. Seth-Smith sends us the first number of his new book

on Parrots in captivity, which will, no doubt, receive great support from our friends the aviculturists. It is nicely printed and got up, and contains four well-drawn coloured plates by Mr. Goodchild, besides some figures in the text. Full particulars concerning the habits of the birds in captivity are supplied.

128. *Sharpe on the Birds of the 'Southern Cross' Expedition.*

[Report on the Collections of Natural History made in the Antarctic Regions during the Voyage of the 'Southern Cross.' London, 1902. 344 pp. ; 53 pls. Price 40s.]

The Report on the collections made in the Antarctic Seas during Borchgrevink's expedition in the 'Southern Cross' (1898-99) contains a chapter on the Birds by Dr. R. Bowdler Sharpe, illustrated by 3 plates and numerous text-figures. The Zoologist of the expedition was Nicolai Hanson, who unfortunately died in October 1899 at Cape Adair. The selected extracts from his diary, relating chiefly to Mammals and Birds, will be read with interest.

The birds treated of by Dr. Sharpe belong to 24 species—3 Penguins, 11 Petrels, 5 Albatroses, 1 Tern, 1 Gull, 2 Skuas, and 1 Cormorant. The exact localities of the specimens of all of them are carefully given, and much information from various sources is added, particularly in the case of the Emperor and Adelia Penguins. It appears that the Emperor Penguin was not found breeding, and therefore no specimen of its egg was obtained. The supposed egg of this species in Mr. J. H. Walter's collection, if authentic (as is apparently the case, though it is not known who took it), therefore remains unique. We hope that the new Antarctic Expedition now in progress will bring us back more information on this subject.

129. *Shelley's 'Birds of Africa.'*

[The Birds of Africa. By G. E. Shelley, F.Z.S., F.R.G.S. Vol. III. London: Porter, 1902. 8vo. Pp. 276. Price £2 2s. net.]

We have now to record the issue of the third volume of Capt. Shelley's new work on the Birds of Africa. It com-

mences with the remainder of the Pipits, which were left unfinished at the close of the second volume (see *Ibis*, 1901, p. 146), and then proceeds to the Larks (*Alaudidæ*), which are numerous in Africa. Capt. Shelley recognizes 74 species, which he refers to 16 genera. Here we find two new generic terms—*Pinarocorys* for *Alauda nigricans* Sund. and *A. erythropygia* Strickl., and *Botha* for *B. difficilis*, a new species from the Orange River Colony based on a single specimen in the British Museum. Two new Larks, moreover, are *Calandrella starki* from Damaraland and *C. sclateri* from Great Namaqualand. We agree with Capt. Shelley in considering the alleged habitat of *Otocorys berlepschi* ("Caffraria") very doubtful.

The rest of the present volume is devoted to the *Fringillidæ*, of which 76 species are recorded as *Æthiopian*. These the author divides into two subfamilies—*Emberizinae* and *Fringillinae*. In the latter group *Serinus* holds a prominent place, being represented by 31 species, while *Passer* with 18 is also well to the front.

Fringillaria readi, from Natal, and *Serinus marshalli*, from St. Helena, are described as new species.

The volume is illustrated by 14 excellent coloured plates, drawn by Grönvold, in which the following species are figured:—*Mirafra gilletti*, *M. nævia*, *M. pæcilosterna*, *M. fischeri*, *M. athi*, *M. hypermetra*, *M. intercedens*, *M. albicauda*, *M. buckleyi*, *M. collaris*, *Pyrrhulauda nigriceps*, *Ammomanes samharensis*, *Tephrocorys blanfordi*, *Botha difficilis*, *Calandrella starki*, *C. sclateri*, *Emberiza poliopleura*, *Fringillaria impetuani*, *Chrysomitris totta*, *Serinus capistratus*, *S. hartlaubi*, *S. albifrons*, *Polioptila gularis*, *P. reichardi*, *Passer castanopterus*, *P. shelleyi*, *P. euchlora*, and *Petronia flavigula*.

130. *Tschusi zu Schmidhoffen on Austrian and Hungarian Birds.*

[Ornithologische Kollektaneen aus Oesterreich - Ungarn und dem Occupations-Gebiete. Von Viktor Ritter von Tschusi zu Schmidhoffen. Ornithol. Monatschr. xxvii. pp. 137-142.]

In this short paper are given remarks on the occurrence

in Austria, Hungary, and the Occupation-Territory of several Falconidæ, *Syrnium uralense*, *Nucifraga caryocatactes*, *Pastor roseus*, and various Grouse, Ducks, &c.

131. *Van Kempen on Birds from the Pas-de-Calais.*

[Oiseaux dont la capture est rare ou fortuite dans les Départements du Nord et du Pas-de-Calais conservés dans la Collection Van Kempen, à Saint-Omer. Par Van Kempen. Bull. Soc. Zool. France, xxvii. pp. 5-18.]

A list of species, with remarks on the places of capture, and dates. Several which we should hardly consider rare are included, and varieties of some are recorded.

132. *Zarudny and Härms on new Birds from Western Asia.*

[Neue Vogelarten. Von N. Zarudny und M. Härms. Ornithol. Monatsb. 1902, pp. 49-54.]

Messrs. Zarudny and Härms describe *Scops semenowi* from Persian Beloochistan and several subspecies—*Neophron percnopterus rubripersonatus* from Southern Persia, *Passer ammodendri korejewi* from Eastern Transcaspia, *Otocorys penicillata iranica* from Northern Persia, and *Parus communis korejewi* from Turkestan. The writers promise us a book on the birds of Eastern Persia.

XLIII.—*Letters, Extracts, Notices, &c.*

WE have received the following letters addressed to "The Editors" :—

SIRS,—In my article on Audouin's Gull (*Larus audouini*) (above, p. 493) there is an error as regards the localities of the specimens of that bird in the Museum of Florence, which are stated to be "all from the island of Mal di Ventre." It is the eggs only which were taken on that island. The specimens are all from the open sea or islands of the Mediterranean, except one, which was procured at Piombino, near Leghorn, being the second example recorded from the mainland of Italy.

The Florence Museum now contains ten specimens of this Gull, two of which are young in down, obtained in May last from the islets on the south-western coast of Sardinia.

Yours &c.,

Cascina Vecchia,

Saltino, Florence.

28th July, 1902.

Count E. ARRIGONI DEGLI ODDI.

SIRS,—I have been requested to write a short account of my visit to the Casquets Lighthouse on Tuesday, May 13th, on the morning of which day a large number of birds met their death by striking the lantern.

In company with two of the Elder Brethren of the Trinity House, I, as a guest, visited the Casquets in the Trinity yacht 'Irene.' We left the ship in one of the boats, and landed on the rock at about 10 A.M. for the purpose of inspection. I explored the surroundings, and found an enormous quantity of dead birds; many of them were skeletons only, but there must have been at least two or three hundred that were quite fresh. Almost all were near the foot of the lighthouse, and the lighthouse-keepers informed me that "early that morning a large flock of small birds, with a few Doves, had passed. Very few of the Doves had struck the lantern, as they seemed to have been more cautious than the small birds, a great number of which had met their death, for over two hundred had been picked up in the gallery outside the lantern." I found that all the small birds belonged to a species of Flycatcher. At the first casual glance I took some of them for Robins, but on closer inspection I at once noticed that they were all Flycatchers. About a quarter, or possibly a third, of the lot had red breasts, and I cannot better describe them than in the first line of Seebohm's account of the Red-breasted Flycatcher, where he says: "This pretty little species is like a miniature Robin in general appearance." I should have said that the breast was a little more orange, not quite so dark as in the Robin, but the picture of *Muscicapa parva* in Lord Lilford's 'Birds of the British Islands' (vol. ii. p. 88) at

once enabled me to identify the bird. Together with one of the sailors, I collected a number of examples and put them in the boat, but I did not go to the ship with them immediately, and when I asked for them on my return, I was told, to my great annoyance, that they had all been made into a pie! It was too late to get more, so I came away without any specimen after all. The weather was fine and clear, with light haze at times; this the lighthouse-keepers said was the case when all the birds came. The wind was E.N.E., light, force 2 to 3; but I was told by one of the officers that, as a fact, the wind was variable during the night.

Writing to one of our party, Mr. Eagle Clarke says:—"I am much obliged for your information about the big migration night at the Casquets; it is most interesting and important, for about the same time great numbers of Whitethroats, Sedge-Warblers, and Willow-Warblers were killed at St. Catherine's Point and at the Needles."

Yours &c.,

R. W. LLEWELLYN.

Baglan, Britonferry.
23rd June, 1902.

[In reference to this communication, we may say that it is hard to believe that a flock of Red-breasted Flycatchers can have occurred on migration at the Casquets. This bird is quite a South-east European species, and does not become really abundant until the Balkan Peninsula is reached. It is a pity that no specimens were preserved in order to settle the question, but our opinion is that the birds in question were probably Robins, which are of frequent occurrence on lighthouses.—EDD.]

SIRS,—In the autumn of 1896 I purchased eight young Gouldian Finches in the grey and green nestling plumage, but was only successful in bringing through their first moult three of them, all of which proved to belong to the black-faced variety, *Poëphila gouldia*. Of these three, one died in 1898 and a second in 1900, the remaining bird living in

captivity until the night of July 26th, 1902, when, just as it was completing its moult, it also died.

My experience, and that of many other bird-keepers, with regard to this species of *Poëphila*, is that it is by no means gifted with longevity: the greater number of imported Gouldian Finches die in the first or second year of captivity. For a specimen therefore to retain its health in one of my flight-cages for six years seems to me exceptional.

However, the longevity of my Gouldian Finch was by no means the most interesting fact in connexion with it. What astonished and interested me most was that from about its third year (in my possession) its colouring deepened very noticeably with each succeeding moult. Now, at its death, it was so dissimilar from the normal *P. gouldiæ* that, if shot wild, nobody would hesitate to regard it as a very distinct species. The following is a description of the final colouring:—

Entire head, throat, and breast glossy blackish indigo or blue-black; a few feathers in the middle of the hind-breast with blue fringes; back of crown slightly olivaceous, grading into the deep olive-green of the nape and back. Feathers of hinder back with more or less broad grass-green borders; feathers of rump blue-black, fringed with peacock-green or blue; tail blue-black. The wings shew no marked difference from the normal type, but the breast is dull ochreous rather than bright saffron-yellow, and is disfigured by a vague central longitudinal broad olive streak and by similar flanking streaks. Between the blue-black breast and the abdomen is a line of copper-reddish; the vent is white. Beak white, with tip and commissure claret-coloured; irides blackish; feet pale buffish, toes pale pinkish flesh-coloured, claws pale buffish.

Among Thrushes and Skylarks which have lived long in captivity melanochoirism is not uncommon. I well remember one Song-Thrush, the property of an old Irishman who used to keep a bird-shop in Keppel Street, Chelsea, which was quite black. Its owner informed me that he had kept the bird for sixteen years, and although it had become quite a cripple from old age, he had not the heart to kill it. He

said that when first caught it was coloured like any other Song-Thrush, but had become darker at each moult during the later years of its captivity.

Now, in my experience (and I have kept many examples of both) an English Song-Thrush, even in captivity, is not by any means such a long-lived bird as the common Blackbird : therefore for one to live to the astonishing age of sixteen years is very exceptional*.

Is melanochroism in old age the result of unusual constitutional vigour, as leucochroism seems to be of constitutional weakness? There is no doubt that white and pied varieties of birds are the result either of in-breeding or of failing strength : they undoubtedly become accentuated with age, as I have noted in the case of all which I have possessed (at various times), and notably in the case of a Crimson-eared Waxbill (*Estrilda phænicotis*) which I have had for six or seven years, and which at the present time has the greater part of its flight-feathers white.

The abnormal variety of *P. gouldiæ* described above will be presented to the Natural History Museum. It has been fed upon white millet, spray-millet, and canary-seed ; therefore the change of colour is not due to unnatural feeding.

Yours &c.,

ARTHUR G. BUTLER, Ph.D., F.L.S., F.Z.S.

124 Beckenham Road,

Beckenham.

28th July, 1902.

SIRS,—In the 'Ib's' for July, when treating of the birds collected by Mr. R. M. Hawker on the White Nile, Mr. Ogilvie-Grant remarked (pp. 462-463) on two male Ruffs in a peculiar state of plumage. The peculiarity consisted in their heads and necks being more or less completely white. I think that it may be worth mentioning that in the south of Spain, where in certain winters Ruffs are fairly numerous, I have frequently noticed this phase of plumage, exactly as described by Mr. Grant in birds from

* I consider seven years in captivity a very good age for a Blackbird : this is probably twice as long as it would live in freedom.

the Sudan. I had always regarded it merely as the winter condition of the white-ruffed type of Ruff, rather than as an albinism, which latter would, I imagine, be more uncommon. I venture to send the Editors a skin of one of these white-necked Ruffs, in case it may interest them to examine such a specimen.

Yours &c.,

Houxy, Wark-on-Tyne, Northumberland.

ABEL CHAPMAN.

26th August, 1902.

SIRS,—Towards the end of March, while spending a few days in Essex, I was particularly struck by the unusual number of Robins, every hundred yards or so of ground being tenanted by a separate pair. The weather being bright and genial, the males were everywhere conspicuous, and in full song. The females, as is usual at that season, were much more shy and retiring in their habits, but their presence might always be detected in the thick covert and hedge-bottoms by the plaintive, long-drawn note, half whistle, half squeak, which they constantly uttered so long as one remained in the proximity of their nesting-site. A beautiful male, in full song, was perched on one of the thick clumps of hawthorn, briar, and bramble, which formed an interrupted hedge along the sides of a deep ditch. The nature of the ground and the gaps in the hedge afforded excellent opportunities for a close approach, and, while I watched him at a distance of a few yards, the female Robin flew up from the dense undergrowth, and, perching near her mate, commenced coquetting. The male ceased singing, and, leaving his perch, settled on a branch close to the female. Raising his tail over his back, after the manner of a Wren, he commenced setting and putting himself into attitudes before her. As he became more excited he gradually raised his body to its full height in a perfectly erect position, with his bill pointing straight into the air and his tail raised to an extraordinary extent. Then, with throat puffed out, he uttered a continuous gurgling twitter, swaying his body meanwhile from side to side. The female appeared to be much pleased with the performance of her mate, and half

Fig. 20.



THE ROBIN'S LOVE-SONG.

crouching, with drooping wings, and slightly raised tail, puffed out the feathers of her sides and flanks. When the love-song had reached its height, it abruptly ceased, but before the male had time to recover his normal position the female had darted off. The male closely pursued her in and out of the bushes, and both were lost to sight for the time being. Presently the male returned to his high perch and commenced to sing.

For the greater part of a morning I watched this pair of Robins, and twice saw the male go through the same curious performance. On each occasion the scene lasted for a minute or more. I made a series of rough sketches of the birds' positions while they were still fresh in my memory, and from these Mr. G. E. Lodge has prepared the accompanying illustration (p. 678), which gives a very exact idea of the male uttering his love-spell, though it is impossible to convey the curious swaying motion of the body which accompanied it. I had never before witnessed this curious courting habit, and I do not find mention of it in any book on British birds to which I have referred.

Yours &c.,

British Museum (Natural History). W. R. OGILVIE-GRANT.

1st July, 1902.

Report on the British Museum (Natural History) for 1901.—The following extracts from the Parliamentary Report on the British Museum, issued in 1902, relate to the National Collection of Birds, and to the progress made in its Arrangement and Description in 1901:—

“Great progress has been made during the past year with the re-arrangement and exhibition of the birds in the Public Gallery. Two-thirds of the collection have now been put into order, the old and faded specimens having been removed and replaced by beautifully mounted examples, representing the leading families and genera of the class Aves. The mounting has been entrusted to Mr. Cullingford, of Durham, and Mr. G. Pickardt, both of whom are celebrated for their correct taxidermy of animals.

“Two new groups of British Birds with their nests and

eggs have been acquired during the year, viz., that of the Tawny Owl (*Syrnium aluco*), presented by Mr. C. B. Horsburgh, and that of the Grasshopper Warbler (*Locustella naevia*), presented by Dr. J. E. Kelso and Mr. John Stares.

“Six additional pier-cases have been placed in the Bird Gallery, containing groups of certain families, such as the Birds of Paradise, Bower-birds, &c.

“During the past year considerable accessions have been made to the osteological and oological collections. These have been registered and incorporated, and marked progress has been made in the arrangement of the skeletons and eggs of birds.

“The collection of eggs is being catalogued by Mr. Eugene W. Oates, who has, in the course of the year, arranged 15,000 specimens in the cabinets, and has completed the first volume of the ‘Catalogue of Birds’ Eggs in the British Museum,’ published by the Trustees. The second volume of this important work is also shortly to be issued, and the third volume is in progress.

“The whole of the large collection of skeletons and bones of the Accipitres has been arranged and labelled by Mr. W. P. Pycraft, who has also determined all the accessions to the collection of birds in spirit.

“Mr. Robert Reid, who has been a voluntary assistant in the Museum for some years past, has done the entire registration and labelling of the accessions, and his help is gratefully acknowledged by the officers of the Bird-section.

“The total number of additions to the specimens of the Class of Birds is 19,743, of which the following deserve especial notice:—

“Fifteen thousand one hundred and fifty eggs bequeathed by the late Mr. Philip Crowley: 150 birds (including the types of two new species), 660 eggs, and 20 nests from China, presented by Mr. C. B. Rickett: 28 birds in spirit, presented by Mr. J. D. La Touche: a valuable collection of birds and eggs from the ‘Southern Cross’ Antarctic Expedition, presented by Sir George Newnes, Bart.: the type of a new species of bird, *Eremiornis carteri*, from W. Australia, presented by Mr. T. Carter: 3 birds, including

one new to the collection, from Barrow Island, and six eggs from Freemantle, Australia, presented by Mr. B. H. Woodward : 59 birds from Borneo, presented by Mrs. Jameson : 47 birds from British Central Africa, presented by Lieut.-Col. Manning : 31 birds from Somaliland, including the type of *Pyrrhulauda harrisoni*, presented by Mr. J. J. Harrison : 107 birds from Queensland, presented by Mr. H. C. Robinson : 103 birds from San Paulo, S.E. Brazil, presented by Sir William Ingram, Bart. : 2 Grecian Long-tailed Tits (*Acredula macedonica*), from Greece, presented by Capt. Farquhar, R.N. : 52 birds from Somaliland, presented by H.H. the Gaikwar of Baroda : a nest and eggs, with parent birds, of the Tawny Owl (*Syrnium aluco*), from Somerset, presented by Mr. C. B. Horsburgh : the type-specimens of a new species of Babbling Thrush (*Crateropus hindii*), from British E. Africa, presented by Dr. S. L. Hinde : 220 nests and eggs from Victoria, presented by the Government of Victoria : 52 birds from China, presented by Mr. C. W. Campbell : 54 birds from the Shan States, including the types of two new species, presented by Lieut.-Col. G. Rippon : 76 eggs from the White Nile, presented by Mr. R. M. Hawker : 393 birds from Somaliland and S. Abyssinia, including the types of three new species, presented by Mr. Alfred E. Pease : 81 birds from Deelfontein, Cape Colony, presented by Col. Sloggett : 20 birds from the Orange-River Colony, presented by Capt. G. E. H. Barrett-Hamilton : 26 birds from Argentina, presented by Mr. Collingwood Ingram : 63 birds, including examples of three species new to the collection and three eggs, from Shendi, Sudan, presented by the Hon. N. C. Rothschild and Mr. A. F. R. Wollaston : 4 types of new species of birds from Equatorial Africa, presented by Mr. F. J. Jackson, C.B. : 179 birds, including four types and six species new to the collection, from British East Africa, presented by Sir Harry Johnston, G.C.M.G., K.C.B. : 124 birds from New Zealand and the adjacent islands, including the type of a new Cormorant (*Phalacrocorax ranfurlyi*), presented by the Earl of Ranfurly : a specimen of the Caroline Crake (*Porzana carolina*), from Tiree Island, presented by Mr. E. L. Phillips :

294 birds from the White Nile, received in exchange from Mr. R. M. Hawker: 37 birds from the Sudau, including the type of *Cisticola aridula*, and examples of two species new to the collection, received in exchange from Mr. H. F. Witherby: 89 birds from the Cameroons, including the types of five new species and examples of six species new to the collection, collected by Mr. G. L. Bates, purchased: 211 birds from Ecuador and Peru, including examples of four species new to the collection, purchased: 49 birds, including the types of nine new species and examples of 23 species new to the collection, and 76 nests and eggs, from New Guinea, collected by Herr Weiske, purchased: and a series of 529 specimens of the family Paridæ, including four types and examples of many species new to the collection, formed by Prof. Menzbier, obtained by purchase."

The late Mr. Simons's Collection of Birds.—An important series of nearly 2500 South-American bird-skins has been recently acquired by the British Museum of Natural History. This represents a part of the results of the labours of the late Mr. Perry O. Simons, who has been engaged in South America for several years collecting Mammals for Mr. Oldfield Thomas. Mr. Simons, we regret to say, was murdered by his native guide in November last, on the boundary between Chile and Argentina, near Puente de Inca, just as he had nearly completed his explorations and was on the point of coming home. Commencing with Ecuador, Mr. Simons had travelled through Peru to Bolivia and Northern Argentina, visiting many localities which no collector had previously explored, and had been at work in South America for about three years when he met his death.

Mr. Budgett's Expedition to the Semliki.—Mr. J. S. Budgett, F.Z.S., who has left England on a scientific mission at Western Uganda, writing from Kampala (13th July, 1902), informs us that he has obtained from Mr. Jackson the services of one of his trained skinners, and is just starting for the Albert Lake. He intends then to proceed to Fort Portal, and so to some spot on the River Semliki, where he will work generally at the Fauna of that little-known district.

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- 120 1865. FOX, The Rev. HENRY ELLIOTT, M.A. ; The Croft, Lytton
Grove, Putney Hill, S.W.
1881. FREKE, PERCY EVANS ; 7 Limcs Road, Folkestone.
1895. FROHAWK, FREDERICK WILLIAM ; 42 Waddon Road, Croydon.
1881. GADOW, HANS, Ph.D., F.R.S., F.Z.S. ; University Museum of
Zoology, Cambridge.
1886. GAINSBOROUGH, CHARLES WILLIAM FRANCIS, Earl of ; Exton
Park, Oakham.
- 125 1900. GARNETT, CHARLES ; 9 Cleveland Gardens, Hyde Park, W. ;
and New University Club, St. James's Street, S.W.
1900. GAYNER, FRANCIS ; Beech Holm, Sunderland ; Kings' College,
Cambridge ; and 20 Queen Square, W.C.
1892. GERRARD, JOHN, Government Inspector of Mines ; Worsley,
near Manchester.
1902. GIBBINS, WILLIAM BEVINGTON ; Ettington, Stratford-on-Avon.
1879. GIBSON, ERNEST, F.Z.S. ; 1 Eglinton Crescent, Edinburgh ;
and Estancia de los Ingleses, Ajo, Buenos Aires.
- 130 1902. GILLETT, FREDERICK, F.Z.S. ; Woodfield, Burgess Hill, Sussex.
1902. GILLMAN, ARTHUR RILEY ; 5 Fellows Road, Hampstead, N.W. ;
and 3 Southampton Street, High Holborn, W.C.
- * 1858. GODMAN, FREDERICK DUCANE, D.C.L., F.R.S., F.Z.S. ; 10 Chan-
dos Street, Cavendish Square, W. *President*.
- * 1858. GODMAN, PERCY SANDEN, B.A., C.M.Z.S. ; Muntham,
Horsham.
1901. GOODCHILD, HERBERT ; 119 Gloucester Road, Regent's
Park, N.W.
- 135 1900. GOODFELLOW, WALTER ; Rosedale, Broadstone, Dorset.
1899. GOULD, FRANK HERBERT CARRUTHERS ; Amherst, Grove Road,
East Molesey, Surrey.

Date of
Election.

1895. GRABHAM, OXLEY, M.A. ; Thornton Dale, Pickering,
Yorks.
1885. GUILLEMARD, F. H. H., M.A., M.D., F.Z.S. ; Old Mill House,
Trumpington, Cambridge.
1876. GÜNTHER, ALBERT C. L. G., M.A., M.D., F.R.S., F.Z.S. ;
2 Lichtfield Road, Kew Gardens, S.W.
- 140 1898. GURNEY, Lieut. ANTHONY FRANCIS, R.N. ; North Runceton Hall,
King's Lynn ; and H.M.S. 'Pembroke,' Chatham.
1870. GURNEY, JOHN HENRY, F.Z.S. ; Keswick Hall, Norwich ; and
Athenæum Club, Pall Mall, S.W.
1897. GURNEY, J. NIGEL ; Sprowston Hall, Norwich.
1896. GURNEY, ROBERT ; Sprowston Hall, Norwich.
1890. GWATKIN, JOSHUA REYNOLDS GASCOIGN ; The Manor House,
Potterne, Devises.
- 145 1901. HAAGNER, ALWIN C. ; Head-Quarters Staff, South African
Constabulary, South Africa. Box 1193 Johannesburg,
Transvaal Colony, South Africa.
1891. HAIGH, GEORGE HENRY CATON ; Grainsby Hall, Great Grimsby,
Lincolnshire.
1898. HAINES, CHARLES REGINALD, M.A. ; Meadhurst, Uppingham,
Rutland.
1887. HAINES, JOHN PLEYDELL WILTON ; 17 King Street, Gloucester.
1898. HALE, The Rev. JAMES RASHLEIGH, B.A. : The Vicarage,
Horton Kirby, Dartford, Kent.
- 150 1886. HAMILTON, EDWARD, M.D., F.L.S., F.Z.S. ; 25 Redcliffe
Gardens, S.W.
1900. HARPER, EDMUND WILLIAM, F.Z.S. ; 1A Camac Street,
Calcutta ; (temp.) c/o The Rev. R. Harper, Wimborne,
Dorset.
1900. HARRIS, HENRY EDWARD ; Overton, Torquay.
1893. HARTERT, ERNST ; The Museum, Tring, Herts.
1868. HARTING, JAMES EDMUND, F.L.S., F.Z.S. ; "Edgewood,"
Weybridge, Surrey.
- 155 1896. HARTLAND, JOHN COLE ; c/o Messrs. Hunt & Co., P.O. Box 11,
Yokohama, Japan.
1893. HARTMANN, WILLIAM ; Tangley Mere, Chilworth, Surrey.
1899. HARVEY, Capt. ROBERT NAPIER, R.E. ; Stanhope Lines,
Aldershot.
1873. HARVEY-BROWN, JOHN A., F.R.S.E., F.Z.S. ; Dunipace House,
Larbert, N.B.

Date of
Election.

1900. HASLICK, PERCY PEDLEY HARFORD; The Wilderness, Southgate, N.
- 160 1902. HATFIELD, JOHN RANDALL; Edlington Hall, Horncastle, Lincolnshire.
1898. HAWKER, RICHARD M., F.Z.S.; Bath Club, Dover Street, W.; and c/o Messrs. Dalgety & Co., 96 Bishopsgate Street Within, E.C.
1887. HEBBERT, CHARLES T., F.Z.S.; The Rhodrons, Hook, Kingston-on-Thames.
1902. HERBERT, BRON; Picket Post, Ringwood, Hants.
1902. HETT, GEOFFREY SECCOMBE; 18 Chepstow Place, Bayswater, W.
- 165 1899. HEYWOOD, RICHARD; St. Margaret's Place, King's Lynn, Norfolk.
1900. HILLS, JOHN WALLER; 14 Victoria Grove, Kensington, W.; and Corby Castle, Carlisle.
1895. HINXMAN, LIONEL W., B.A.; Geological Survey of Scotland, Edinburgh.
1884. HOLDSWORTH, CHARLES JAMES; Sunnyside, Wilmslow, Cheshire.
1877. HOLDSWORTH, EDMUND W. H., F.Z.S.; South Town, Dartmouth, Devon.
- 170 1888. HORSFIELD, HERBERT KNIGHT; Ivy Lodge, Chapel Allerton, Leeds.
1893. HOSE, CHARLES, D.Sc., F.Z.S.; Baram, Sarawak, Borneo.
1895. HOWARD, HENRY ELIOT; Clarelands, near Stourport.
1881. HOWARD, ROBERT JAMES; Shearbank, Blackburn, Lancashire.
- * 1858. HUDLESTON, WILFRID HUDLESTON, M.A., F.R.S., F.Z.S.; 8 Stanhope Gardens, S.W.
- 175 1893. HUDSON, WILLIAM HENRY, F.Z.S.; Tower House, St. Luke's Road, Westbourne Park, W.
1869. HUME, ALLAN OCTAVIAN, C.B., C.S.I., F.Z.S.; The Chalet, Kingswood Road, Upper Norwood, S.E.
1890. HUNTER, HENRY CHARLES VICARS; Mawley Hall, Cleobury Mortimer, Salop.
1901. INGRAM, COLLINGWOOD; The Bungalow, Westgate-on-Sea; and c/o Lady Ingram, 65 Cromwell Road, S.W.
1902. INNES BEY, Dr. WALTER FRANCIS; Curator of the Zoological Museum, School of Medicine, Cairo, Egypt.

Date of
Election.

- 180 1870. IRBY, Licut.-Col. LEONARD HOWARD, F.Z.S. ; 14 Cornwall Terrace, Regent's Park, N.W.
1888. JACKSON, FREDERICK J., C.B., C.M.G., F.L.S. ; The Red House, Aldeburgh, Suffolk.
1902. JACOB, Dr. FRANK HARWOOD ; 4 Oxford Street, Nottingham.
1892. JAMES, HENRY ASHWORTH ; Hurstmonceaux Place, Hailsham, Sussex.
1896. JESSE, WILLIAM ; La Martinière College, Lucknow, Oudh, India ; (temp.) Ashbrook, Middlemoor, Tavistock, S. Devon.
- 185 1889. JOHNSON, FREDERICK PONSONBY, B.A., J.P., D.L. ; Castlesteads, Brampton, Cumberland.
1891. JOHNSTON, Sir HARRY HAMILTON, G.C.M.G., K.C.B., F.Z.S. ; 27 Chester Terrace, Regent's Park, N.W.
1900. JONES, Major HENRY (late 62nd Regt.) ; East Wickham House, Welling, Kent.
1899. JOURDAIN, The Rev. FRANCIS CHARLES ROBERT, M.A. ; Clifton Vicarage, near Ashbourne, Derbyshire.
1902. JOY, NORMAN HUMBERT, M.R.C.S., L.R.C.P. ; Bradfield, near Reading.
- 190 1880. KELHAM, Col. HENRY ROBERT (1st Bn. Highland Light Infantry) ; 52 Tisbury Road, Hove, Brighton.
1894. KELSALL, Capt. HARRY JOSEPH (R.G.A.) ; Wicklow Artillery, Southern Division.
1897. KELSALL, The Rev. JOHN EDWARD, M.A. ; Milton Rectory, Lymington, Hants.
1882. KERMODE, PHILIP M. C. ; Cooil-ny-Feeny, Ramsay, Isle of Man.
1891. KERR, J. GRAHAM, F.Z.S., Professor of Natural History, The University, Glasgow.
- 195 1895. KINGSFORD, WILLIAM EDWARD ; Cairo, Egypt.
1902. KINNEAR NORMAN BOYD ; 18 Grosvenor Crescent, Edinburgh.
1882. KNUBLEY, The Rev. EDW. PONSONBY, M.A. ; Steeple Ashton Vicarage, Trowbridge.
1900. KÖNIG, Dr. ALEXANDER FERDINAND ; Professor at Bonn University, Coblenzer-Strasse 164, Bonn, Germany.
1892. LAIDLAW, THOMAS GEDDES ; Bank of Scotland Branch, Perth.
- 200 1884. LANGTON, HERBERT ; 11 Marlborough Place, Brighton.
1881. LASCELLES, The Hon. GERALD ; The King's House, Lyndhurst.

Date of
Election.

1892. LA TOUCHE, JOHN DAVID DIGUES, C.M.Z.S.; Imperial Maritime Customs, Chin Kiang, China.
1892. LAWS, ARTHUR MOORE; Ayrshire Mine, Lamagundi, Mashonaland, South Africa.
1898. LEAROYD, A. ERNEST; Rawthorpe Hall, Huddersfield.
- 205 1876. LEGGE, COL. WILLIAM VINCENT (late R.A.), F.Z.S.; Cullenswood House, St. Mary's, Tasmania.
1898. LE SOUEF, DUDLEY, C.M.Z.S.; Director of the Zoological Gardens, Melbourne, Victoria, Australia.
1868. LE STRANGE, HAMON, F.Z.S.; Hunstanton Hall, King's Lynn, Norfolk.
1875. L'ESTRANGE, COL. PAGET WALTER, R.A.; 10 The Lees, Malvern.
1893. LEWIS, FREDERICK; Assistant Conservator of Forests, The Kaechchin, Colombo, Ceylon.
- 210 1889. LEYLAND, CHRISTOPHER JOHN; Haggerston Castle, Beal, Northumberland.
1897. LILFORD, JOHN, Lord, F.Z.S.; Lilford Hall, Oundle, Northants.
1874. LLOYD, COL. JOHN HAYES, F.Z.S.; 95 Adelaide Road, N.W.
1898. LOAT, WILLIAM LEONARD S., F.Z.S.; Cumnor Place, near Oxford.
1897. LODGE, GEORGE EDWARD, F.Z.S.; 5 Thurloe Studios, Thurloe Square, S.W.
- 215 1889. LOYD, LT.-COL. ARTHUR PURVIS, F.Z.S. (late 21st Hussars); Harnham Cliff, Salisbury.
1896. LUBBOCK, PERCY; 26 Cadogan Gardens, S.W.; "Emmetts," Ide Hill, Sevenoaks; and King's College, Cambridge.
1877. LUMSDEN, JAMES, F.Z.S.; Arden House, Alexandria, N.B.
1896. LUTTMAN-JOHNSON, JAMES ARTHUR, M.A., F.Z.S.; 101 Mount Street, W.
1900. MCCONNELL, FREDERICK VAVASOUR; 37 Cranley Gardens, South Kensington, S.W.
- 220 1897. MCLEAN, JOHN CHAMBERS; Waikohu Station, Te Karaka, Gisborne, New Zealand.
1899. MACMILLAN, GEORGE AUGUSTIN; 19 Earl's Terrace, Kensington, W.
1894. MACPHERSON, ARTHUR HOLTE; 51 Gloucester Terrace, Hyde Park, W.

Date of
Election.

1899. MARAIS, JOHANN van OOSTERZEE; c/o J. Hammond Toone, Esq.,
Department of Agriculture, Cape Town, Cape Colony.
1894. MARSHALL, ARCHIBALD McLEAN; c/o J. McLean Marshall, Esq.,
Estates Office, Dunskey, Portpatrick, N.B.
- 225 1894. MARSHALL, JAMES McLEAN; Estates Office, Dunskey, Port-
patrick, N.B.
1899. MARTIN, BASIL WILLIAM; Elm House, Elm Row, Hampstead,
N.W.; and Darley Abbey, Derby.
1901. MARTIN, WILLIAM K., B.A.; Dartington, Totnes, South
Devon.
1897. MASON, COL. EDWARD SNOW; 20 Minster Yard, Lincoln.
1898. MASSEY, HERBERT; Ivy Lea, Burnage, Didsbury, Manchester.
- 230 1899. MATHEWS, ARNOLD; Ballynahinch Castle, Toombeola, Co.
Galway.
1898. MAXWELL, AYMER EDWARD; 1st Bn. Grenadier Guards.
1896. MAXWELL, Rt. Hon. Sir HERBERT E., Bt., P.C., M.P., F.R.S.;
49 Lennox Gardens, S.W.
1883. MEADE-WALDO, EDMUND GUSTAVUS BLOOMFIELD, F.Z.S.;
Stonewall Park, Edenbridge, Kent.
1899. MEINERTZHAGEN, RICHARD; 25 Rutland Gate, S.W.; and
Royal Fusiliers, The Dépôt, Wellington, Mandalay,
Burma.
- 235 1900. METCALFE, GEOFFREY BRYAN THEOPHILUS; 8th (King's Royal
Irish) Hussars, Curragh Camp, Co. Kildare; and Roche
Court, Salisbury.
1886. MILLAIS, JOHN GUILLE, F.Z.S.; Comptons Brow, Horsham.
1879. MITCHELL, FREDERICK SHAW; Clyderhowe, Edmonton, Alberta,
N.W.T., Canada.
1901. MITCHELL, P. CHALMERS, M.A., D.Sc., F.Z.S.; 1 K Portman
Mansions, Baker Street, W.
1897. MITCHELL, WILLIAM; 5 Bury Street, St. James's, S.W.
- 240 1898. MONRO, HORACE CECIL; Queen Anne's Mansions, Queen Anne's
Gate, S.W.
1900. MONTAGU, EDWIN S.; Trinity College, Cambridge; and
12 Kensington Palace Gardens, W.
1900. MUGFORD, FREDERICK ERNEST; 16 Buckingham Street, Strand,
W.C.
1886. MUIRHEAD, GEORGE; Speybank, Fochabers, Co. Moray, N.B.
- * 1893. MULLENS, WILLIAM H., M.A., F.Z.S.; 9 St. James's Place,
S.W.

Date of
Election.

- 245 1892. MUNN, PHILIP WINCHESTER; Laverstoke, Whitechurch, Hants.
 1897. MUNT, HENRY; 83 Kensington Gardens Square, W.
 1900. MUSTERS, JOHN PATRICIUS CHAWORTH, D.L., J.P.; Annesley
 Park, Nottingham.
 1885. NEALE, EDWARD; 43 Charlotte Street, Portland Place, W.
 1882. NELSON, THOMAS HUDSON; The Cliffe, Redcar, Yorkshire.
- 250 1895. NESHAM, ROBERT, F.Z.S., F.E.S.; Utrecht House, Queen's
 Road, Clapham Park, S.W.
 1897. NEUMANN, OSCAR; 10 Potsdamer Strasse, Berlin, W.
 1872. NEWCOME, FRANCIS D'ARCY WILLIAM CLOUGH; Thurston
 Lodge, Bury St. Edmunds, Suffolk.
 1899. NEWMAN, JOHN LEONARD; Park Field, Mill Hill, Middlesex.
- * 1858. NEWTON, ALFRED, M.A., F.R.S., F.Z.S., Professor of Zoology
 in the University of Cambridge; Magdalene College, Cam-
 bridge.
- 255 1886. NICHOLLS, HOWARD HILL JOHN, M.R.C.S.; Bramber Lodge,
 Downview Road, West Worthing.
 1902. NICHOLS, JOHN BRUCE; Parliament Mansions, Victoria
 Street, S.W.
 1900. NICHOLS, WALTER BUCHANAN; Stour Lodge, Bradfield,
 Manningtree, Essex.
 1876. NICHOLSON, FRANCIS, F.Z.S.; 84 Major Street, Manchester;
 and Heathside, Knutsford, Cheshire.
 1902. NICOLL, MICHAEL JOHN; 10 Charles Road, St. Leonards.
- 260 1895. NOBLE, HEATLEY; Temple Combe, Henley-on-Thames.
 1887. NORMAN, GEORGE CAMERON, F.Z.S.; 68 Lombard Street, E.C.;
 and Mount Melville, St. Andrews, N.B.
 1882. OATES, EUGENE WILLIAM, F.Z.S.; 1 Carlton Gardens, Ealing, W.;
 and Savage Club, Adelphi Terrace, W.C.
 1892. OGILVIE, FERGUS MENTEITH, M.A., F.Z.S.; The Shrubbery,
 72 Woodstock Road, Oxford.
 1890. OGILVIE-GRANT, W. R.; British Museum (Nat. Hist.),
 Cromwell Road, S.W.
- 265 1889. OGLE, BERTRAM SAVILE; Hill House, Steeple Aston,
 Oxford.
 1883. PARKER, HENRY, C.E., F.Z.S.; 76 Station Road, South Shore,
 Blackpool, Lancs.
 1880. PARKIN, THOMAS, M.A., F.Z.S.; Fairseat, High Wickham,
 Hastings.
 1891. PATTERSON, ROBERT, F.Z.S.; Malone Park, Belfast.

Date of
Election.

1884. PATTERSON, SIR ROBERT LLOYD, D.L., F.L.S.; Croft House, Holywood, Co. Down.
- 270 1902. PEASE, ALFRED EDWARD, M.P., F.Z.S.; Pinchinthorpe House, Guisborough, Yorkshire.
1894. PEARSON, CHARLES EDWARD; Hillcrest, Lowdham, Nottingham.
1891. PEARSON, HENRY J.; Bramcote, Notts.
1898. PENN, ERIC FRANK; Taverham Hall, Norwich.
1891. PENROSE, FRANK, M.D., F.Z.S.; 84 Wimpole Street, W.
- 275 1900. PERCIVAL, ARTHUR BLAYNEY, F.Z.S.; Somerset Court, Brent Knoll, Somerset; and The Treasury, Mombasa, East Africa Protectorate.
1886. PHILLIPS, E. LORT, F.Z.S.; 79 Cadogan Square, S.W.
1888. PHILLIPS, GEORGE THORNE; Wokingham, Berkshire.
1893. PIGOTT, THOMAS DIGBY, C.B.; 5 Ovington Gardens, S.W.
1893. PIKE, THOMAS MAYER, M.A.; care of Mr. Porter, 7 Prince's Street, Cavendish Square, W.
- 280 1899. POPE, WALTER HENRY; Windermere, Salisbury.
1896. POPHAM, HUGH LEXBORNE, M.A.; 14 Arlington Street, St. James's, S.W.; and Oxford & Cambridge Club, Pall Mall, S.W.
1898. PRICE, ATHELSTAN E.; Broxbourne, Herts.
1901. PROUD, JOHN T.; Dellwood, Bishop Auckland.
1893. PYCRAFT, WILLIAM PLANE, F.Z.S.; British Museum (Natural History), Cromwell Road, S.W.
- 285 1888. RADCLYFFE, CHARLES ROBERT EUSTACE; Hyde, Wareham, Dorset.
1879. RAWSON, HERBERT EVELYN, F.Z.S.; Fallbarrow, Windermere.
1894. READ, RICHARD HENRY, L.R.C.P., M.R.C.S.; Church Street, Hanley, Staffordshire..
1888. READ, ROBERT H.; 7 South Parade, Bedford Park, W.
1877. REID, CAPT. SAVILE G. (late R.E.), F.Z.S.; The Elms, Yalding, Maidstone.
- 290 1893. RENDALL, PERCY, M.D., F.Z.S.; Ewell, Surrey; and Devonshire Club, St. James's Street, S.W.
1895. RICKETT, CHARLES BOUGHEY; Hong Kong and Shanghai Bank, Foochow; and care of Messrs. H. S. King & Co., 65 Cornhill, E.C.
1896. RIPPON, LT.-COL. GEORGE, F.Z.S.; 29th Burma Infantry, Mandalay, Upper Burma.

Date of
Election.

1902. RIVIERE, BERNARD BERYL; 82 Finchley Road, N.W.
 1898. ROBINSON, HERBERT C.; Holmwood, Aigburth, Liverpool.
 295 1896. ROGERS, Capt. J. MIDDLETON, F.Z.S.; 1st (Royal) Dragoons;
 and Riverhill, Sevenoaks, Kent.
 1893. ROTHSCHILD, The Hon. L. WALTER, M.P., D.Sc., F.Z.S.; The
 Museum, Tring, Herts.
 1894. ROTHSCHILD, The Hon. N. CHARLES, F.Z.S.; Tring Park
 Tring, Herts.
 1883. ST. QUINTIN, WILLIAM HERBERT, F.Z.S.; Scampston Hall,
 Rillington, Yorkshire.
 1899. SAPSWORTH, ARNOLD DUER, F.Z.S.; The Dower House, Ember
 Court, East Molesey, Surrey; and National Liberal Club,
 Whitehall Place, S.W.
 300 1902. SARGEAUNT, ARTHUR ST. GEORGE; 83 Madeley Road, Ealing, W.
 1870. SAUNDERS, HOWARD, F.L.S., F.Z.S.; 7 Radnor Place, Hyde
 Park, W. (*Secretary.*)
 1902. SAUNDERS, WILLIAM HENRY RADCLIFFE, C.E., F.Z.S.; 33
 Princes Square, W.
 1898. SCHERREN, HENRY, F.Z.S.; 9 Cavendish Road, Haringay, N.
 * 1858. SCLATER, PHILIP LUTLEY, D.Sc., F.R.S., Secretary to the
 Zoological Society of London, 3 Hanover Square, W.;
 and Odiham Priory, Winchfield, Hants. (*Editor.*)
 305 1891. SCLATER, WILLIAM LUTLEY, M.A., F.Z.S.; South African
 Museum, Capetown, South Africa.
 1899. SELOUS, FREDERICK COURTENEY, F.Z.S.; Heatherside, Worples-
 don, Surrey.
 1889. SENHOUSE, HUMPHREY PATRICIUS, B.A.; The Fitz, Cocker-
 mouth, Cumberland.
 1899. SERLE, The Rev. WILLIAM, M.A., B.D.; Davidson's Mains,
 Midlothian, N.B.
 1900. SERVICE, ROBERT; Maxwelltown, Dumfries.
 310 1901. SETH-SMITH, DAVID, F.Z.S.; Glengarry, Canning Road,
 Croydon.
 1899. SHARMAN, FREDERIC; 47 Goldington Road, Bedford.
 1871. SHARPE, RICHARD BOWDLER, LL.D., F.L.S., F.Z.S.; Assistant
 Keeper, Zoological Department, British Museum (Natural
 History), South Kensington, S.W.
 1900. SHELFORD, ROBERT; Curator of the Sarawak Museum, Kuching,
 Sarawak, British North Borneo; and Hill House, Harvey
 Road, Guildford.

Date of
Election.

1870. SHELLEY, Capt. G. ERNEST, F.Z.S. (late Grenadier Guards);
39 Egerton Gardens, South Kensington, S.W.
- 315 1865. SHEPHERD, The Rev. CHARLES WILLIAM, M.A., F.Z.S.; Trottis-
cliffe Rectory, Maidstone Kent.
1900. SIMEY, ATHELSTANE ILIFF; 11 St. Peter's Road, Mile-end, E.
1882. SLATER, The Rev. HENRY H., M.A., F.Z.S.; Thornhaugh
Rectory, Wansford, Northants.
1902. SMITH, ABEL HENRY, M.P.; Woodhall Park, Hertford.
1896. SONDES, GEORGE EDWARD, Earl, F.Z.S.; Lees Court, Faversham.
- 320 1881. SOUTHWELL, THOMAS, F.Z.S.; 10 The Crescent, Chapel Field,
Norwich.
1893. STANLEY, SAMUEL S.; 3 Regent Grove, Leamington, Warwick-
shire.
1900. STARES, JOHN WILLIAM CHESTER; Portchester, Hants.
1902. STENHOUSE, JOHN HUTTON, M.B., R.N., H.M.S. 'Diana,'
Mediterranean Squadron; and c/o Messrs. Woodhead &
Co., 44 Charing Cross, S.W.
1898. STIRLING, WILLIAM, J.P., D.L. Co. Ross; Monar, Ross; and
Kinellan Lodge, Strathpeffer, N.B.
- 325 1889. STOATE, WILLIAM; Ashleigh, Burnham, Somerset.
1893. STONHAM, CHARLES, C.M.G., F.R.C.S., F.Z.S.; 4 Harley
Street, Cavendish Square, W.
1881. STUDDY, Col. ROBERT WRIGHT (late Manchester Regiment);
Waddeton Court, Brixham, Devon.
1887. STYAN, FREDERICK WILLIAM, F.Z.S.; Ben Craig, Bayham Road,
Sevenoaks; and Shanghai, China.
1887. SWINBURNE, JOHN; c/o Abe Bailey, Esq., Box 50, Johannes-
burg, Transvaal Colony, S. Africa.
- 330 1882. SWINHOE, Col. CHARLES, M.A., F.L.S., F.Z.S.; 7 Gloucester
Walk, Campden Hill, W.
1884. TAIT, WILLIAM CHASTER, C.M.Z.S.; Entre Quintas 155, Oporto,
Portugal.
- * 1858. TAYLOR, EDWARD CAVENDISH, M.A., F.Z.S.; 74 Jermyn Street,
S.W.
1873. TEGETMEIER, WILLIAM BERNHARD, F.Z.S.; 16 Alexandra
Grove, North Finchley, N.
1889. TENNANT, EDWARD PRIAULX; 40 Grosvenor Square, W.; and
The Glen, Innerleithen, N.B.
- 335 1886. TERRY, Major HORACE A. (late Oxfordshire Light Infantry);
The Lodge, Upper Halliford, Shepperton.

Date of
Election.

1900. THORBURN, ARCHIBALD ; High Leybourne, Hascombe, near Godalming, Surrey.
1893. THORPE, DIXON L. ; Loshville, Etterby Seaur, Carlisle.
1894. TICEHURST, NORMAN FREDERIC ; Guy's Hospital, S.E.
1902. TOWNSEND, REGINALD GILLIAT, M.A. ; Buckholt, Dean, Salisbury.
- 340 1893. TREVOR-BATTYE, AUBYN B. R., F.Z.S. ; Avenue Studios, 76 Fulham Road, S.W.
- * 1858. TRISTRAM, The Rev. HENRY BAKER, M.A., LL.D., F.R.S., C.M.Z.S., Canon of Durham ; The College, Durham.
1864. UCHER, HENRY MORRIS, F.Z.S. ; Sheringham Hall, Norfolk.
1896. URWICK, WILLIAM F. ; 27 Bramham Gardens, S.W.
1894. USSHER, RICHARD JOHN ; Cappagh House, Cappagh, S.O., Co. Waterford, Ireland.
- 345 1890. VENOUR, STEPHEN ; Fern Bank, Altrincham, Cheshire.
1884. VEREY, ALFRED SAINSBURY ; Heronsgate, near Rickmansworth.
1881. VERNER, Lt.-Col. WILLIAM WILLOUGHBY COLE ; Junior United Service Club, S.W. ; Siam Cottage, Hartford Bridge, Winchfield.
1902. WADE, EDWARD WALTER ; 325 Anlaby Road, Hull.
1886. WADE-DALTON, Col. H. D. ; Hauxwell Hall, Finghall, R.S.O., Yorkshire.
- 350 1895. WALLIS, HENRY MARRIAGE ; Hilliers, Bucklebury Common, South End, near Reading.
1881. WALSINGHAM, THOMAS, Lord, F.R.S., F.Z.S. ; Merton Hall, Thetford, Norfolk.
1899. WALTON, HERBERT JAMES, M.B., F.R.C.S. ; c/o Messrs. King, King, & Co., Bombay.
1872. WARDLAW-RAMSAY, Lt.-Col. R. G., F.Z.S. ; Whitehill, Rosewell, Midlothian, N.B.
1896. WATKINS, WATKIN ; Highfield, Harrow ; and Wellington Club, S.W.
- 355 1900. WESTELL, WILLIAM PERCIVAL ; 5 Glenferrie Road, St. Albans, Herts.
1891. WHITAKER, BENJAMIN INGHAM ; Hesley Hall, Tickhill, Rotherham.
1891. WHITAKER, JOSEPH I. S., F.Z.S. ; Malfitano, Palermo, Sicily.
1887. WHITEHEAD, JEFFERY, F.Z.S. ; Newstead, Wimbledon, Surrey

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1897. WHYMPER, CHARLES ; 7 James Street, Haymarket, S.W.
- 360 1898. WIGLESWORTH, JOSEPH, M.D. ; County Asylum, Rainhill, Lanes.
1894. WILKINSON, JOHNSON ; St. George's Square, Huddersfield, Yorkshire.
1896. WILLIAMS, Capt. LIONEL ARTHUR ; Llangarran, Salisbury ; 91 Victoria Street, S.W. ; and Isthmian Club, Piccadilly, W.
1897. WILSON, ALLAN REID ; Easthill, East Bank Road, Sheffield.
1888. WILSON, CHARLES JOSEPH ; 34 York Terrace, Regent's Park, N.W.
- 365 1900. WILSON, EDWARD ADRIAN, M.B., F.Z.S. ; Westal, Cheltenham.
1887. WILSON, SCOTT BARCHARD, F.Z.S. ; Heatherbank, Weybridge Heath, Surrey.
1897. WITHERBY, HARRY FORBES, F.Z.S. ; Holmchurst, Burley, New Forest.
1899. WOLLASTON, ALEXANDER FREDERICK RICHMOND, B.A. ; Wotton-under-Edge, Gloucestershire.
1902. WORKMAN, WILLIAM HUGHES ; Lismore, Windsor, Belfast.
- 370 1875. WRIGHT, CHARLES A., F.L.S., F.Z.S. ; Kayhough, Kew-Gardens Road, Kew, S.W.
1871. WRIGHT, E. PERCEVAL, M.D., F.L.S., F.Z.S., Professor of Botany in the University of Dublin.
1891. WRIGHT, THOMAS, M.D. ; Castle Place, Nottingham.
1895. YERBURY, Lt.-Col. JOHN WILLIAM (late R.A.), F.Z.S. ; 8 Duke Street, St. James's, S.W. ; and Army and Navy Club, S.W.
1889. YOUNG, Capt. JAMES B., R.N. ; Ridgway House, Ottery St. Mary, Devon.
- 375 1897. YOUNG, JOHN JOSEPH BALDWIN, M.A. ; Richmond Park, near Sheffield.

Extra-Ordinary Members.

1899. GODWIN-AUSTEN, Lt.-Col. HENRY HAVERSHAM, F.R.S., F.Z.S. ; Nore, Hascombe, Godalming.
1860. WALLACE, ALFRED RUSSEL, F.R.S., F.Z.S. ; Broadstone, Wimborne, Dorset.

Honorary Members.

1886. AYRES, THOMAS ; Potchefstroom, Transvaal Colony, South Africa.
1890. BERLEPSCH, Graf HANS VON, C.M.Z.S. ; Schloss Berlepsch, Post Gertenbach, Witzenhausen, Germany.

Date of
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1860. CABANIS, Dr. JEAN, C.M.Z.S.; Friedrichshagen, bei Berlin.
 1900. COLLETT, Prof. ROBERT, F.M.Z.S.; University Museum,
 Christiania.
 5 1870. FINSCH, Dr. OTTO, C.M.Z.S.; Zoologisch Rijks Museum, Leiden.
 1894. GIGLIOLI, Dr. HENRY HILLYER, F.M.Z.S.; Reale Istituto di
 Studi Superiori, Florence.
 1898. GOELDI, Dr. EMIL A., C.M.Z.S.; Director of the Goeldi
 Museum, Pará, Brazil.
 1902. RADDE, Prof. GUSTAV F., F.M.Z.S.; Director of the Museum,
 Tiflis, Trans-Caucasia, Russia.
 1893. REICHENOW, Dr. ANTON, C.M.Z.S.; Museum für Naturkunde,
 Invalidenstrasse, Berlin.
 10 1890. SALVADORI, Count TOMMASO, M.D., F.M.Z.S.; Royal Zoological
 Museum, Turin.

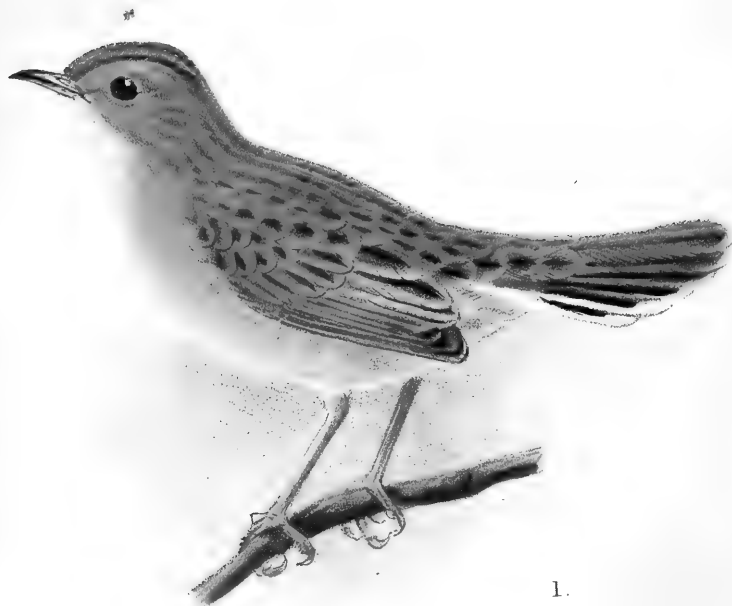
Foreign Members.

1890. ALLEN, JOEL ASAPH, Ph.D., F.M.Z.S.; American Museum of
 Natural History, Central Park, New York City, U.S.A.
 1900. BIANCHI, Dr. VALENTINE; Imperial Zoological Museum, St.
 Petersburg.
 1872. BOCAGE, Prof. J. V. BARBOZA DU, F.M.Z.S.; Royal Museum,
 Lisbon.
 1880. BUREAU, LOUIS, M.D.; École de Médecine, Nantes.
 5 1902. CHAPMAN, FRANK MICHLER; American Museum of Natural
 History, New York, U.S.A.
 1875. DORIA, Marchese GIACOMO, F.M.Z.S.; Strada Nuova, 6, Genoa,
 Italy.
 1872. FATIO, Dr. VICTOR, C.M.Z.S., Geneva.
 1902. IHERING, Dr. HERMAN VON; Museu Paulista, São Paulo,
 Brazil.
 1886. MADARÁSZ, Dr. JULIUS VON; National Museum, Buda-
 Pesth.
 10 1894. MENZBIER, Prof. Dr. MICHAEL, C.M.Z.S.; Imperial Society of
 Naturalists, Moscow.
 1881. MEYER, Dr. ADOLF BERNHARD, C.M.Z.S., Director of the Royal
 Museum, Dresden.
 1890. OUSTALET, Dr. EMILE, C.M.Z.S., Professeur au Muséum
 d'Histoire Naturelle, Jardin des Plantes, Paris.
 1894. PLESKE, H.E. Dr. THEODOR, F.M.Z.S.; Office of the Company
 "Nadeshda," St. Petersburg.

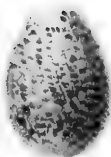
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1900. REISER, Dr. OTTHMAR ; Landes Museum, Sarajevo, Bosnia,
Austro-Hungary.
- 15 1880. RIDGWAY, ROBERT, C.M.Z.S. ; Smithsonian Institution,
Washington, D.C., U.S.A.
1894. SCHALOW, HERMAN ; 15 Schleswiger Ufer, Berlin, N.W.
1900. STFJNEGER, LEONHARD, C.M.Z.S. ; Smithsonian Institution,
Washington, D.C., U.S.A.
1902. SUSCHKIN, Dr. PETER, C.M.Z.S. ; Imperial University, Moscow,
Russia.
1896. WINGE, HERLUF ; University Zoological Museum, Copenhagen.

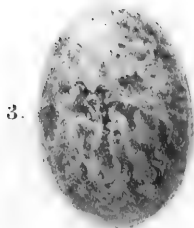




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2.



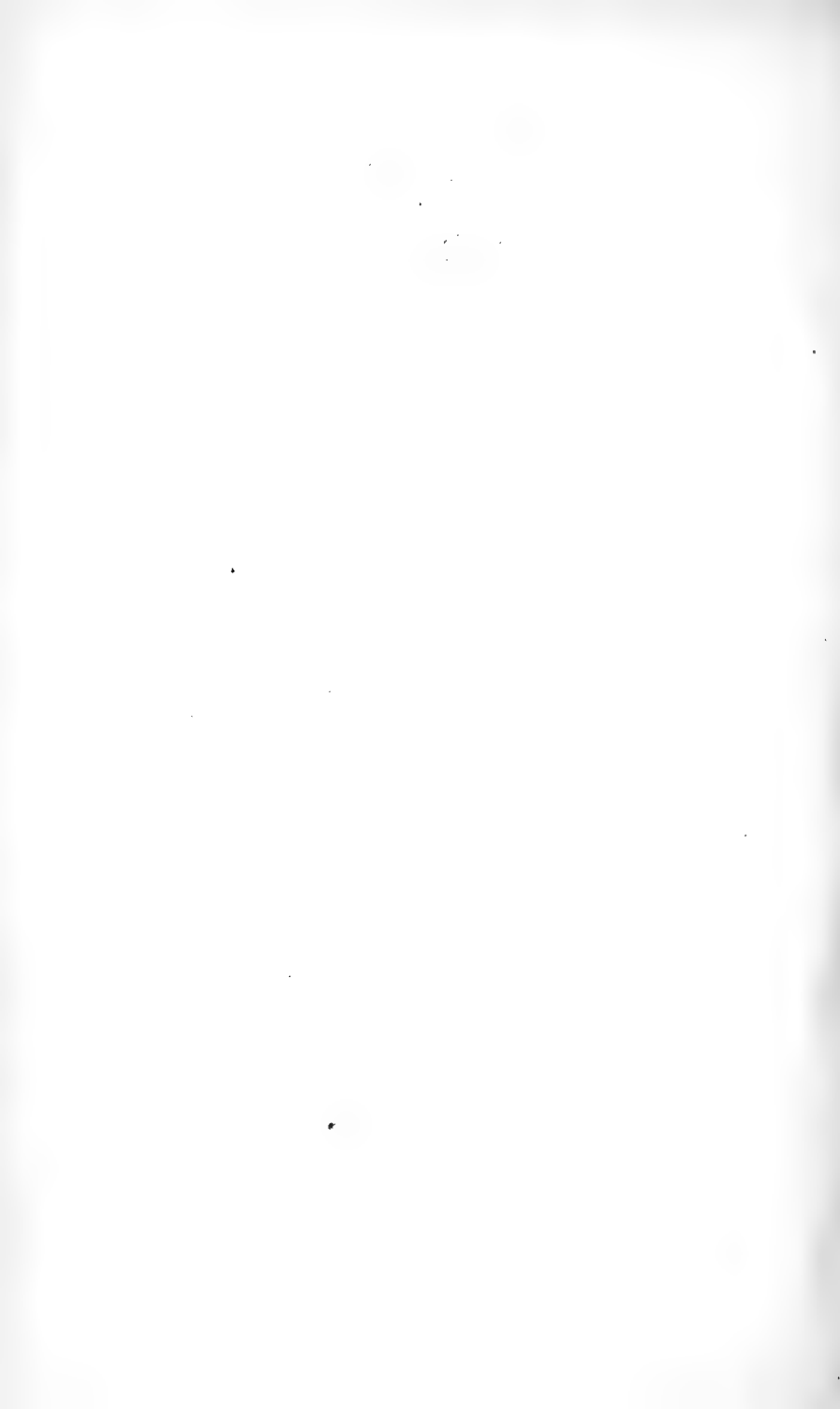
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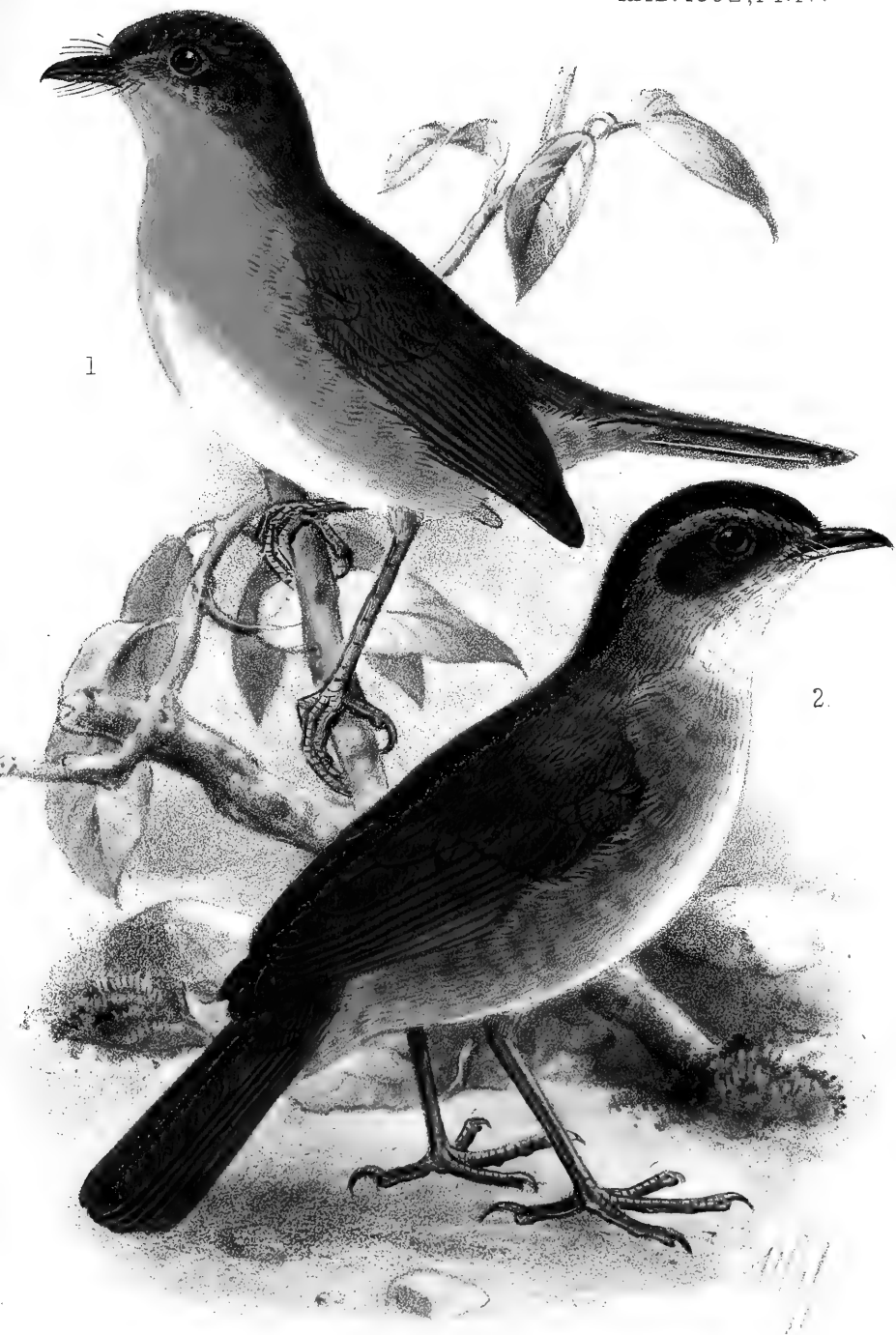
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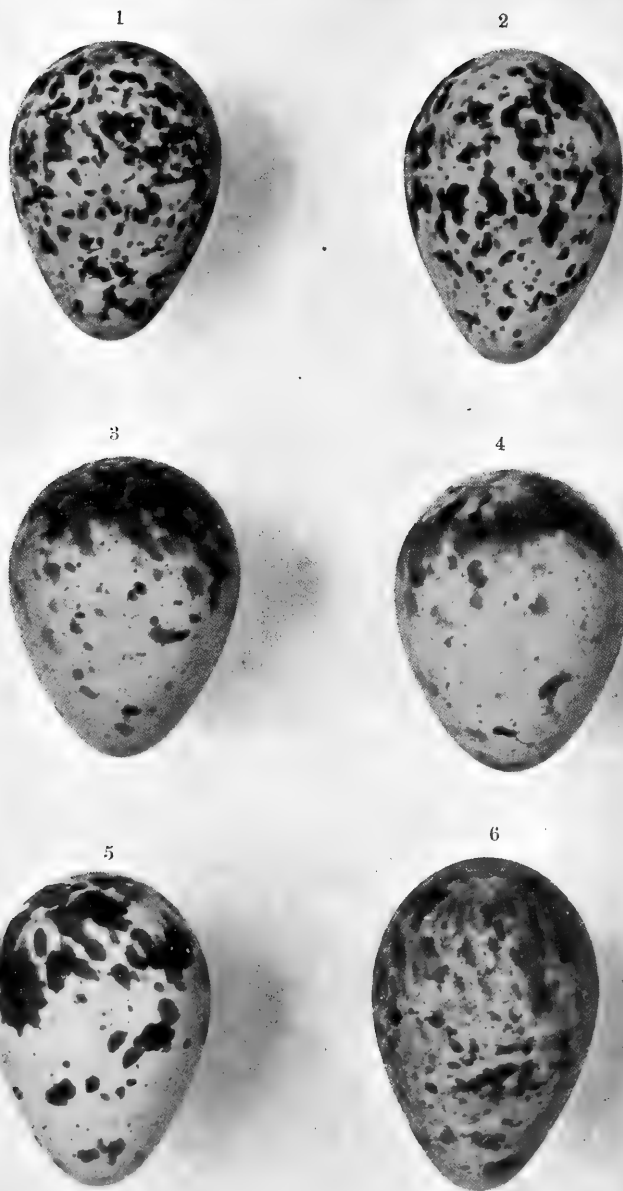


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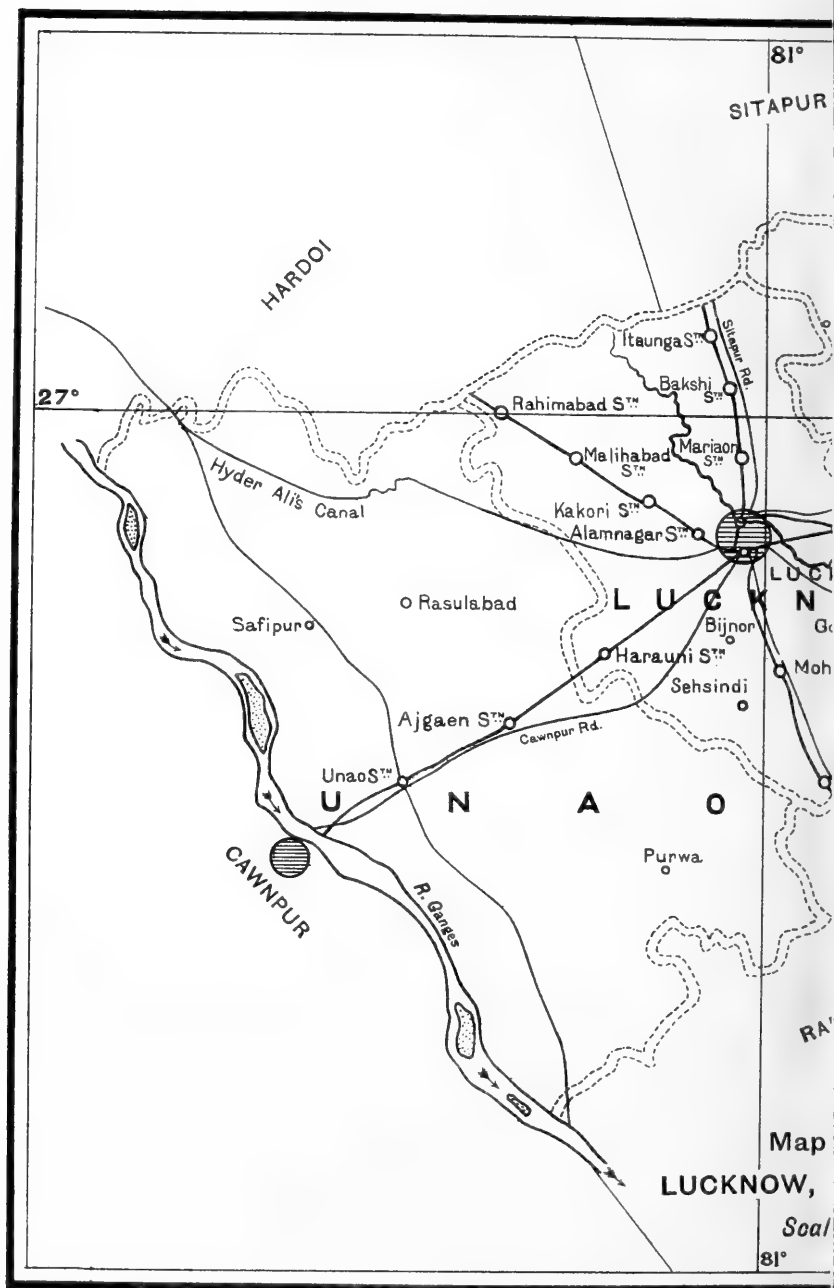
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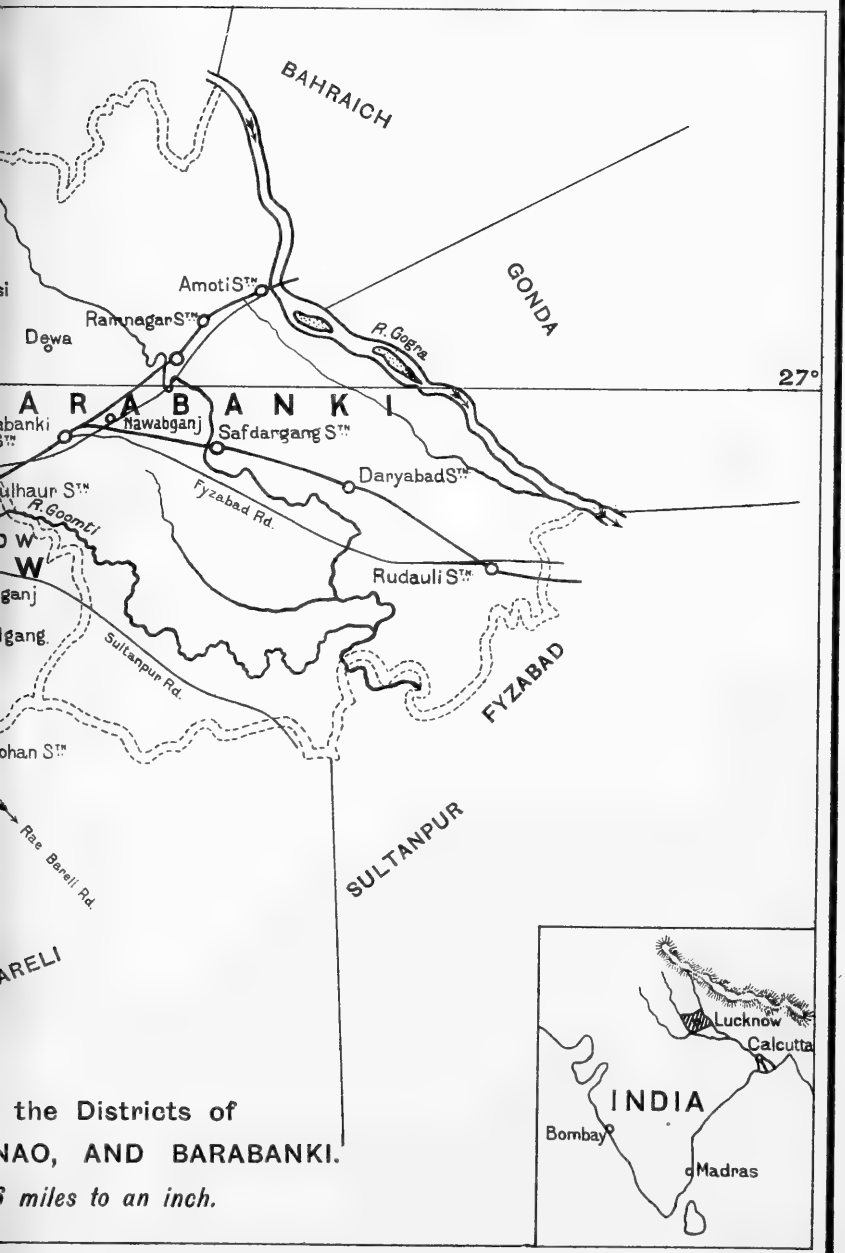


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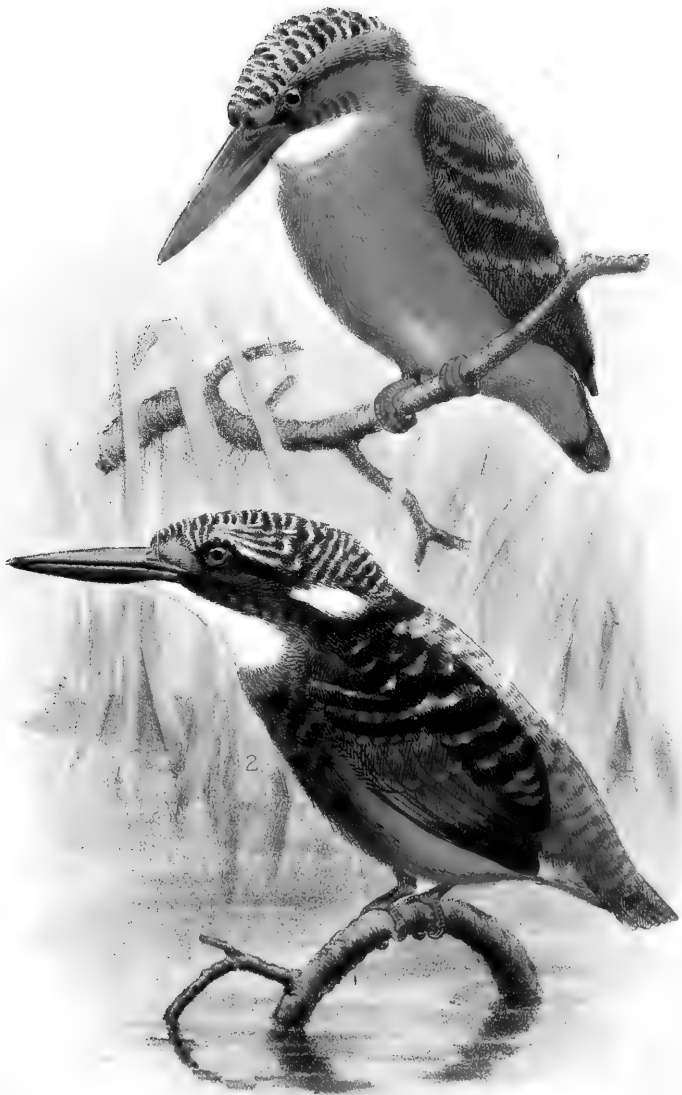
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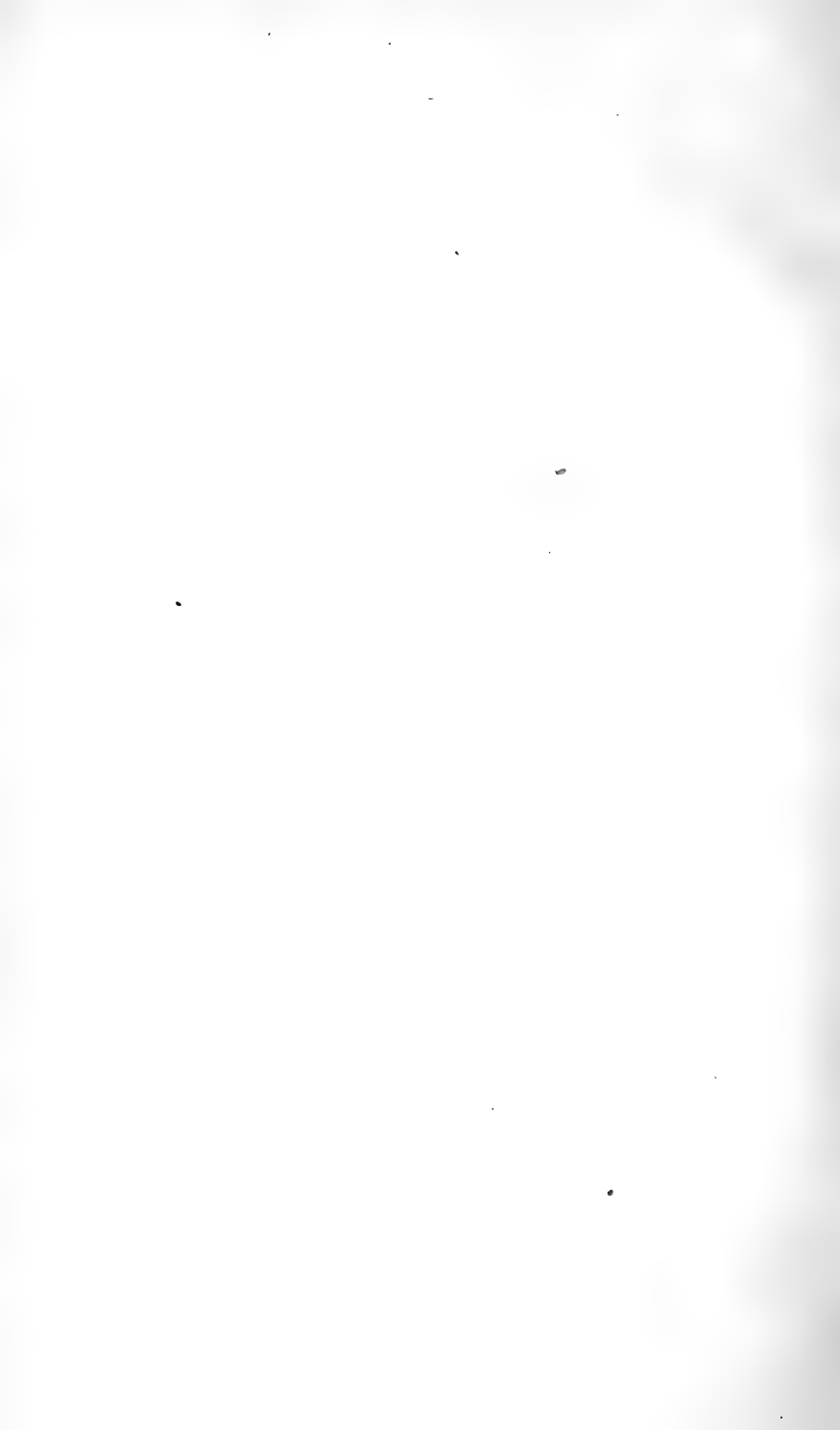


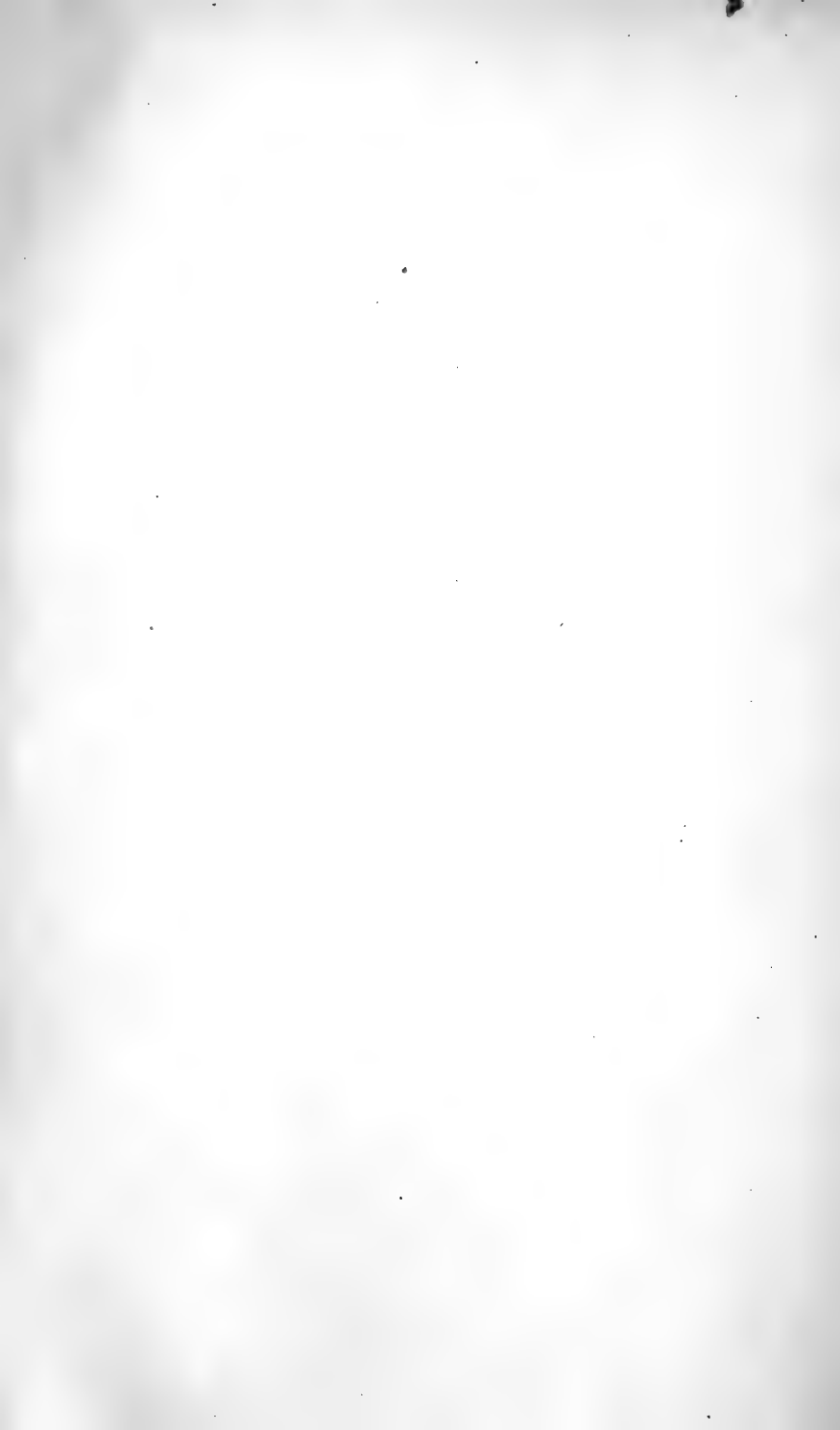
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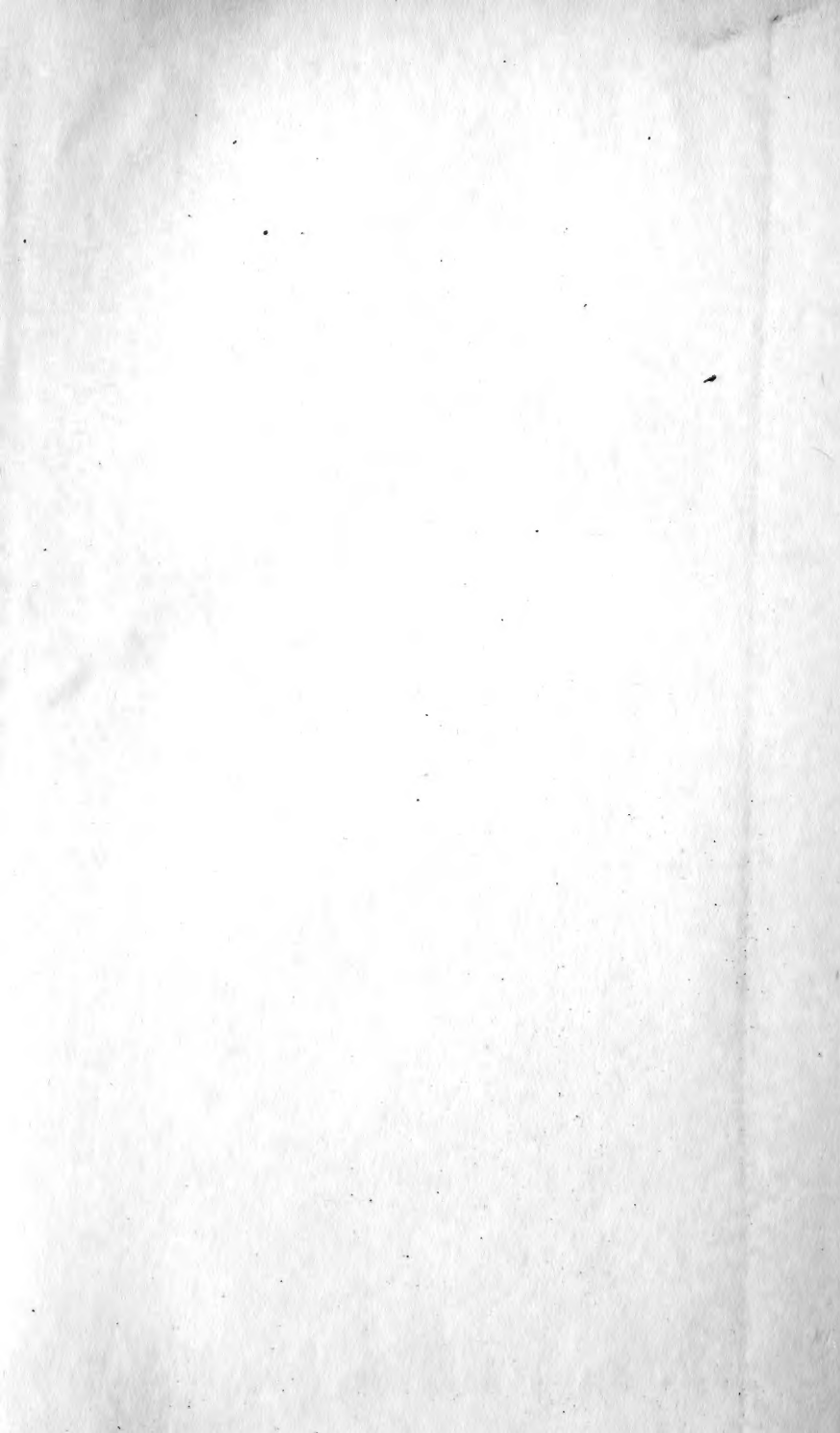
1. MELITTOPHAGUS OREOBATES.

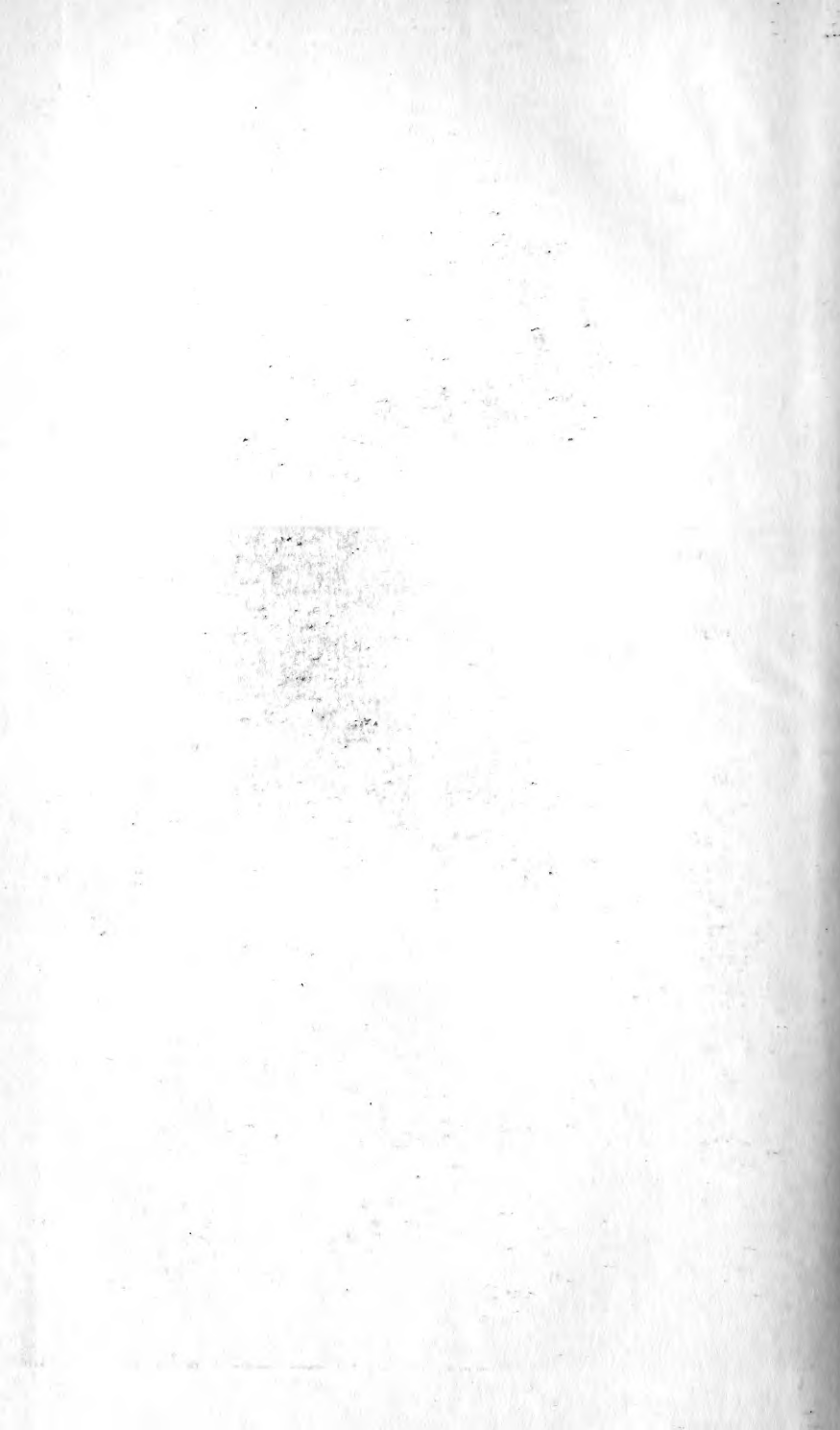
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